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PUBLIC HEALTH PROBLEMS NEEDING RESEARCH*

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IN THIS past generation more has been found out about the human body and about disease than in the previous history of the world. Perhaps this is a broad statement to make, but when we go back even thirty years, when doctors were allowed to practice medicine after a course of study of only one year, as compared to the minimum time now of six years, and to the days when tuberculosis was looked upon as a hopeless, unpreventable, incurable disease and diphtheria impossible to control, and when we consider other wonderful possibilities that are offered today in the field of preventive and curative medicine, we realize the great advances that have been made.

For the most part medical practitioners have kept up with recent discoveries, but in the field of preventive medicine the practice lags far behind the newer knowledge. If we found no more new facts in the field of preventive medicine, if we merely applied the knowledge we have, and if application of this knowledge in a preventive way would only catch up with the practice of medicine in individual cases, life would be extended a number of years and our death rate would thus decrease.

When I received the invitation to present the field of preventive medicine and the results of my experience as a public health administrator, and I began taking inventory, the fact that impressed me most was not the need of finding out new facts but of finding out the best methods for the application of the facts which we now possess.

These are a few outstanding problems that present themselves for research work:

Methods for the practical application of the known facts about the causes and prevention of diseases—Thirty years ago Pasteur saw the possibility of making all diseases disappear from the face of the earth. He saw the possibilities, but think how far we are still behind them. It is like understanding the principle of the internal combustion engine, but how different is an understanding of its principles and being able to apply the knowledge in the building of an automobile or an aeroplane. We need to know how best to apply the knowledge we have.

Training needed for a public health administrator—Public health authorities today are quite concerned about this problem for in this field we are too much influenced by tradition. There was a time when we thought that the health officer must necessarily be a doctor of medicine, and even now many insist upon it. In fact, one of the volunteer agencies that give great help in the work of public health, before contributing financial aid to a unit insists that the director of that unit be a graduate in medicine. That policy is to be questioned. When we see

*Read at the meeting of the Division of States Relations of the National Research Council, at Washington, D. C., May 27, 1926.

so many evidences in this country of the public health work of men like Professor Sedgwick, not an M.D., or Dr. Stiles, an honorary M.D., as well as of many leading public health officers who are not M.D.'s—we are convinced that the training of a public health administrator should be more definitely determined.

FUNCTION AND ORGANIZATION OF HEALTH DEPARTMENTS

What should be the legitimate functions of a public health department?—This question is worrying health officers all over the country. We see many phases of our work conflicting with the practitioners of medicine. Some may doubt whether these questions are subjects of research. But if the subject is appropriate and approved by a faculty for a thesis in a public health course, it should be a proper subject for investigation and research.

Organization needed in different types of communities—The machinery needed in a large city is very different from the machinery needed in a small city; and still different from that for a small town and for a rural section. So, in the matter of organization there is need for further study.

How should different phases of health work be distributed among the departments of government?—For example, what work should be assigned to the department of health, to the department of education, to labor, agriculture, medical relief, charity or welfare? These are problems confronting every state and the federal government as well. Health functions are now divided among fifteen different bureaus of our government. The reason that there are so many problems in this service is because public health is a new field. We are pioneers in this field which offers unusual opportunities for research assistance.

The comparative value of different kinds of health work in terms of results to the population—With a political unit the question arises: What phase of health work should be undertaken with a limited amount of money? Some say sanitation, some public health nursing, some malaria control. But the particular phase of health work yielding the greatest results to the population is still undetermined. Can we hope for a general standard or must we determine efforts by local conditions?

Comparative results of different kinds of health work based upon a unit cost. (Ed. Note. Not discussed.)

Value of the different methods to control each disease—Some health officials think that the way to combat certain diseases is by vaccination, for instance, as a preventive for typhoid fever; another health officer will endeavor to control it entirely by sanitation.

The influence of the methods for the control of one disease upon the prevalence of other diseases—Sanitation which prevents filth-borne diseases may have an indirect effect upon non-filth-borne diseases, such as malaria and tuberculosis. It has often been our experience that when we carry on measures against one disease other diseases will decrease. Improved sanitation alone has made a great reduction in tuberculosis.

Unknown influences affecting the prevalence of certain diseases—An example of this is the influence of the season upon diphtheria. We know a great deal about controlling diphtheria, yet there is a certain great mystery about it. We have observed year after year a definite season of distribution—it reaches its minimum during the latter part of May and then gradually rises, reaching its maximum in November and December. This is another subject offering interesting research.

Influence affecting susceptibility or immunity in certain diseases—It has been said that a person who has had typhoid fever has five times as many chances of contracting tuberculosis as someone who has never had typhoid fever.

More definite information regarding causative factors and control measures of

such diseases as colds, influenza, measles, whooping cough, scarlet fever, meningitis and poliomyelitis—These diseases have a great significance, yet we are still unable to control them. More research work is necessary before they can be controlled.

SUGGESTED RESEARCH IN TUBERCULOSIS

More definite information regarding the relative merits of the different factors in the treatment of tuberculosis—For example, what elements in nutrition are of most value in the treatment of tuberculosis? This disease has carried off more people than any other, but it has been brought down to third or fourth place among the causes of death and we believe that it can be further reduced. Herein lies a wonderful opportunity for research. The National Tuberculosis Association, through its research committee, is doing splendid work, but only lack of funds prevents the association from extending its research. In Virginia we have three tuberculosis sanatoria, each one caring for 120 to 320 patients. What a wonderful opportunity those institutions offer for research work in determining just what elements in nutrition will yield the greatest benefit to the patients. Some day we may find a cure for tuberculosis in nutrition, if our institutions can obtain the funds to carry on more extensive research work.

Relative predisposing influence of different diseases upon the development of tuberculosis—In the Virginia sanatoria we have statistics on 6,000 patients with their histories. A study of these statistics might show the relation of various diseases to the development of tuberculosis.

Safer and more economic methods for the disposal of excreta—In our cities and counties an astounding amount of fertilizing material is wasted. This material could be utilized to the advantage of agriculture. Our beautiful streams are becoming sewers, but we believe that the scientific men of this country can solve this problem, and that ultimately we shall be able to dispose of human excreta in a useful instead of a dangerous manner.

The effect of different diseases upon longevity—We know that diphtheria, for instance, affects the nerves, the heart and the muscular system; scarlet fever affects the kidneys; syphilis, practically every organ. We ought to know the definite relationship between such diseases and longevity.

Influence of heredity upon longevity—We are all interested in this question. Although much work has been done, it still offers a field for further study. There is probably no subject in which we all are more interested than in taking care of our own health, and the greater part of the program in preventive medicine conducted by public health departments has been directed against diseases which occur before the age of 50. Very little research has been done to prevent deaths beyond 50 years of age, although there are great possibilities for preventing a large proportion of the deaths occurring after that age.

PUBLIC HEALTH AND SOCIETY

Sociological conditions influencing and influenced by the declining birth rate—Those of us who attend child welfare clinics watch the colored and foreign mothers come carrying babies in their arms, babies hanging onto their skirts and several children pattering after them. But the white mothers and the Americans who come have only one, or two at most; and the scientific members of society as a whole have very few. What will all this mean in the future? It is a question whether our scientific classes are reproducing themselves. If they are not reproducing themselves, what does the future hold for us?

Influence affecting maternal and infant mortality in the first month after birth—Research in this field should enable us to reduce materially the death rates of maternity and infancy.

Influence of physical disabilities upon school attendance and scholarship—There is a great possibility for applying public

funds more economically in our school work, when we know that by removing disabilities we can prevent failures in education. Sometimes, it seems to me, if school work were absolutely to stop for one year and if during that time the children could be built up physically, more would be accomplished in education in the remaining nine years than if the schools had been open for ten consecutive years.

How best to secure correction of physical disabilities of school and preschool children—This is a phase of health work developed very recently and again we find ourselves pioneers. How far must public health authorities go in the matter? What is the field legitimately reserved for the private practitioner? These, too, are questions for profitable research.

Relative responsibility of the federal, state and local governments for disease prevention and health promotion. (Ed. Note. Not discussed.)

Economic effect of public health. (Ed. Note. Not discussed.)

Is public health work as now carried on to prevent the diseases of early life, increasing longevity and producing a stronger race, or is public health effort merely prolonging the life and increasing the number of the unfit? (Ed. Note. Not discussed.)

Are there influences at work affecting the race which are not now generally recognized—Should these influences be brought into the field of the public health worker?

Should states and cities combine the public health and welfare departments? (Ed. Note. Not discussed.)

How can the fundamental facts regarding the causes of disease be more readily made the common knowledge of all the people?—With the knowledge that we now have regarding the causes and prevention of disease it does seem as though such knowledge should be the possession of every educated person. Yet we see men who are bachelors of art, masters of art, and doctors of philosophy, who are ignorant of the most fundamental principles of preventive medicine.

RESEARCH AN ADMINISTRATIVE PROBLEM

The foregoing are only a few of the problems inviting research. During the past year the U. S. Public Health Service has been carrying on an extensive research program. Unfortunately, individual states as a rule cannot obtain money strictly for research work. Any money that a state health department can get for its use must be apportioned to bring the greatest results for the least expenditure. That is our practical administrative problem, which deters us from doing experimental work, and most research work is necessarily experimental. But we must do something that yields returns. For instance, we may believe that our greatest returns come from efforts directed against typhoid fever. We know how readily the spread of that disease responds to preventive measures and that success in combating it has been instrumental in many instances in obtaining support for public health work.

When we started our public health work in Virginia seven years ago, there were 15,000 cases of typhoid fever annually in the state, and last year there were only about 1,800 cases. This has given officials great confidence in the Department of Public Health and they are now willing to give us more money for other lines of work, but still we can not obtain enough funds for research work. For that reason we must leave much to the U. S. Public Health Service and to volunteer agencies.

In the list of projects carried on by the U. S. Public Health Service twenty-six subjects were discussed at its recent meeting. In the foregoing list I have presented twenty-seven, yet these two lists overlap in only four or five instances and there are many other problems which could be mentioned, for the field of public health is apparently without limit.

ICE CREAM AS A CAUSE OF EPIDEMICS*

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THE RAPID RISE of the ice cream industry and the general use of ice cream as a food in the past few years has added another item to the public health official's responsibilities. If an epidemiologist had been tracing an epidemic a few years back, he could have practically left ice cream out of consideration. However, today it has become such a common article of diet that it should be taken into account in any work of this nature. The public health official, if he has not already done so, will in the very near future, need to regulate its sanitary quality.

PATHOGENIC BACTERIA NOT KILLED BY FREEZING

Although there has been a vast amount of work done to show that pathogenic bacteria are not readily killed by freezing, yet, due to the nature of the product ice cream has not always been considered a serious source of bacterial infection. This view is held especially among laymen and those not familiar with the facts.

Ravenel[33] was among the earliest investigators to show that pathogenic bacteria could withstand very low temperatures. He exposed anthrax spores, cultures of *Bacterium diphtheriae*, *B. typhosus* and *B. prodigiosus* to the temperature of liquid air (312° F. below zero) for periods ranging from 15 minutes to 3 hours without any apparent effect upon their viability or virulence. Later Macfadyen[22] and Macfadyen and Rowland[23] confirmed his results by exposing the same organisms with a few added species to the temperature of liquid air for one week without appreciable effect upon their vitality. To test out the extreme temperature which pathogenic bacteria could withstand Macfayden and Rowland[24] subjected the same organisms to the temperature of liquid hydrogen (—252° C.) for 10 hours without any appreciable effect on them. A great deal of work has been done also to show that pathogenic bacteria live for a considerable length of time in ice and a great many epidemics have been traced to this source.

In addition to the above, considerable work has been done to show that bacteria may not only survive these extreme temperatures but that certain types may grow at extremely low temperatures. Two pieces of work demonstrating this may be mentioned. Pennington[30] found that bacteria in milk may increase at temperatures below 0° C. Ravenel, Hastings and Hammer[34] confirmed her results and further found that at —9° C. there was no increase in those bacteria which grow on gelatin and agar. Therefore, there is ample preliminary evidence to show that ice cream should be looked upon with suspicion.

PATHOGENIC BACTERIA AND ICE CREAM

Mitchell[26] in studying the viability of *B. typhosus* in ice cream concludes that:

1. "*Bacillus typhosus* survives in ice cream for varying lengths of time—in the recorded experiments from 12 to 39 days. It is plain, therefore, that ice cream may easily transmit typhoid fever."

2. "The findings emphasize the ne-

* Published by permission of the Director of the Michigan Agricultural Experiment Station, East Lansing, Michigan.

cessity of strict cleanliness of the manufacture of ice cream, and the importance of pasteurization of milk and milk products used in these mixtures."

Prucha and Brannon[31] in a similar study found that *B. typhosus* still survived at the end of 2 years and 4 months in ice cream kept at a temperature between 8° F. below zero and 8° F. above, but for the most part about —4° F. They state, "At the end of one year, about one germ out of every thousand survived, and at the end of two years, one germ out of every ten thousand survived."

Bolten,[2] to check up experimentally the results of the findings in the epidemic at Newport, R. I., the previous year, inoculated ice cream with *B. typhosus* (Rawlings) and froze it. He was able to isolate the organism after freezing the cream for a period of 74 days. Another series of experiments was performed with *B. diphtheriae*. They were frozen for 4 days in cream and tested for toxin production. The freezing failed to decrease the toxin production of the organisms.

Davis[9] tested the viability of hemolytic streptococci in ice cream in the following manner. The ice cream was tested for hemolytic streptococci and none was found. They were then added to the ice cream and it was kept firmly frozen. Tests were made at intervals of 1 to 3 days for 18 days.

He says, "Practically no change appeared in the number of streptococci or in the number of other organisms during this period. It was furthermore shown by inoculation that the hemolytic cocci retained their virulence during this period."

He reached the following conclusion: "In ice cream, hemolytic streptococci remain alive for at least eighteen days without any appreciable diminution in number or virulence. Ice cream would seem to be, therefore, a most suitable medium for the transmission and preservation of dangerous streptococci."

EPIDEMICS REPORTED

No claim is made that the following list of epidemics due to ice cream is complete:*

Buchanan[3] traced cases of scarlet fever to the cream which had been used in the manufacture of ice pudding.

Turner[41] traced the origin of an outbreak of typhoid fever to ice cream made by Italians. He concluded that ice cream should be subject to the same regulations as milk.

Munro[27] traced an epidemic of typhoid fever to ice cream.

Hope[19] traced 25 cases of typhoid fever to ice cream bought at a village fair. A case of typhoid fever was located in the house of the vendor of the ice cream.

Barras[1] reported 19 cases of typhoid fever due to ice cream sold by a vendor suffering from typhoid fever.

Henry[17] reports an epidemic of diarrhoea involving 146 cases with 1 death due to ice cream. The baby in the house of the vendor of the ice cream was suffering from the disease. It seems that the baby's napkins were washed within a few inches of the strainer which was used in making the ice cream and he attributed contamination of the ice cream to carelessness in this respect.

Robertson[35] reported an outbreak of disease involving 52 cases in which a bacillus belonging to the Gaertner group was isolated from the ice cream sold by the vendor to the cases in question.

Peacock[29] reported an outbreak of disease due to ice cream involving 67 persons. *B. enteritidis* of Gaertner was isolated from the feces of one of the sufferers and blood of another agglutinated a laboratory culture of the organism.

Collingridge[5] attributed the illness of 18 boys to the consumption of ice cream. Epigastric pain, colic, headache, nausea, and nervous depression were the main symptoms of the disease. Vomiting and diarrhoea were recorded in some cases.

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* The author would appreciate it very much if health officers and others would assist him in making the list as complete as possible.

Vaughan and Perkins[42] reported 2 epidemics of severe intestinal disease due to cheese and ice cream. A virulent germ was isolated by Perkins from the ice cream that had poisoned a large number of people at Waters, Michigan.

Vaughan and Novy[43] reported finding typhotoxin in ice cream which had affected many persons at Lawton, Michigan. Other cases are reported by them in their book on *Ptomains and Leucomains* (pp. 118–122).

Cumming[6] reports 29 cases of typhoid fever with 3 deaths occurring at Helen, California, due to eating chocolate ice cream made by a typhoid carrier. The woman in question had had typhoid fever 17 years previously.

Professor Delepine[10] investigated an outbreak of typhoid fever involving 118 cases occurring at Eccles and Manchester. The makers and sellers were Italians. He was of the opinion that the ice cream was grossly infected and that it must have occurred between the time of heating and freezing the materials.

Russell and Duval[40] investigated an epidemic of typhoid fever occurring at Fort Sill, Oklahoma, involving 20 cases. There were 16 cases in the main group which were definitely attributed to ice cream. The ice cream was made at Lawton, Oklahoma, and sold at the post exchange.

Lumsden[20] of the U. S. Public Health Service investigating a serious typhoid outbreak in Birmingham, Alabama, involving 350 cases, definitely attributed it to one of the large ice cream factories there. Infected milk or cream supplied to the cream plant from some dairy or dairy farm outside the city was the source of the infection. In 1917 he traced another outbreak of typhoid fever in Chattanooga, Tennessee, to ice cream. This time 75 cases were involved.

Hamilton[16] sent questionnaires to cities throughout the United States. Ninety-one cities replied, 7 reported epidemics and 5 food poisonings from eating ice cream, or 13.17 per cent of the cities replying had had trouble with ice cream.

At York, Pennsylvania,[37] an outbreak of typhoid fever involving 57 cases was traced to milk and ice cream. A laborer working in an ice cream factory became infected through contaminated milk supply. The epidemic was traced to both the ice cream and the milk supply.

Lumsden and Anderson[21] investigated the history of 566 cases of typhoid fever as related to the eating of ice cream. They state, "None of the cases in 1909 was definitely attributable to infection in ice cream, but in view of the insanitary manner in which a considerable proportion of the ice cream in Washington is still handled it is quite probable that a certain number of cases was caused by infection in ice cream."

Waterman,[44] from the data furnished by Dr. C. J. Larsen, Health Officer, Negaunee, Michigan, reported an epidemic of 42 cases of typhoid fever with 4 deaths.

McCoy, Bolten and Bernstein[25] investigated an epidemic of diphtheria involving 402 cases in the towns of Newport, Portsmouth, Middletown and Jamestown, Rhode Island, and reached the conclusion that it was due to ice cream. The ice cream had probably become contaminated through the milk used.

They also reported 5 cases in Providence and 1 in East Providence, Rhode Island, through the courtesy of Dr. Charles V. Chapin, Health Officer, as traceable to the above epidemic. In the same paper they mention 9 more cases occurring at Fall River, Massachusetts, 7 of whom gave a history of having eaten ice cream at either Newport or Portsmouth, Rhode Island, during this time. So they really imply that a total of 417 cases could be traced to the contaminated ice cream. They rightly concluded that the epidemic could have been averted by pasteurizing the milk supply.

Behla[4] reported an epidemic of typhoid fever due to whipped cream and ice cream.

Rosenau[36] makes a reference to ice

TABLE I

Summary of Findings by H. W. Hamilton

City	Year	Number of cases	Disease or illness
Perth Amboy, New Jersey	1913	80	Typhoid
St. Louis, Missouri	1917	25	Typhoid
Gallup, New Mexico	1915	Epidemic	Typhoid
Holbrook, Arizona	1915	2	Typhoid
Brooklyn, New York	1914	50	Typhoid
Brooklyn, New York	1915	9	Typhoid
Brooklyn, New York	....	12	Typhoid
Lynn, Massachusetts	....	Number	Ptomaine poisoning
Rochester, New York	....	40	Unknown
New London, Connecticut	1914	30 or 40	Unknown
Kewanee, Illinois	1914	Several	Poisoning

cream in his book as follows: "Freezing kills only a certain percentage of typhoid bacilli. In Washington, several cases of the disease were traced to ice cream."

Ramsey[32] investigated an epidemic of scarlet fever involving 116 cases at Flint, Michigan, 9 cases at Mt. Morris, Michigan, and 3 cases at Goodrich, Michigan, villages near Flint, which occurred at the same time. He definitely attributed the epidemic to ice cream.

Two epidemics due to ice cream have been reported by the Pennsylvania Department of Health, one at Dowington, Pennsylvania,[39] involving approximately 100 cases occurring during August and September of 1918. The ice cream was manufactured by an Italian in West Chester, Pennsylvania, where a few cases also occurred. Efforts to prove him a carrier were not successful. The other epidemic[38] was much more extensive and comprised 1,851 investigated cases located in 21 counties of Pennsylvania. The epidemic occurred in August and lasted until the latter part of September. The ice cream in question was manufactured by a large company at Hershey, Pennsylvania. They received cream from 29 creameries supplied by hundreds of dairy farms in 6 different counties. During August they shipped 30,000 gallons of ice cream to 102 dealers in 82 localities and shipped pasteurized cream to 22 other dealers in 19 different towns. The flash method of pasteurizing at 160° F. with subsequent holding at 140° F. for 20 minutes was used. Data showed that ice cream from this source was the medium of infection in 70.2 per cent of the cases, with 6.7 per cent of the cases, where it was uncertain but highly probable accounting for 76.7 per cent of all cases involved. Out of 20 employees at the plant, there were 3 cases of typhoid fever, one a brick wrapper, another a driver and the third worked on the pasteurizer.

CONCLUSIVE FACTS

From a study of these recorded outbreaks due to ice cream, it is evident that there is a possibility of disease being spread by ice cream. While it is true that ice cream may contain millions of bacteria and be harmless, as is often the case, yet there is the possibility that ice cream containing such numbers has been handled carelessly in which case there is always danger. After all it is not mere numbers of bacterial colonies that count from a public health standpoint, but the kind. So it is generally considered desirable to have all food products with as low a bacterial count as possible. In order to do this, it is well to have certain regulations and standards to guide the manufacturer.

SAFEGUARDS

In practically every city of any size today pasteurization of the milk supply is required by ordinance. The time and temperature are also pretty well established. There are not many such ordinances or laws pertaining to ice cream in most cities or states. According to the latest information available,[18] 4 states, Arkansas, Iowa, Louisiana, and Tennessee have laws requiring pasteurization. In most of the states, if ice cream is advertised or labeled as being pasteurized, it must be pasteurized according to the

specifications made by the state. Some states require the products used in the manufacture of ice cream, as milk and cream, to be pasteurized. Pasteurization is, therefore, most generally optional. It is only the good sense of the manufacturer or the advertising value that determines whether the ice cream mix shall be pasteurized or not. Many of the old experienced producers from their experience with milk have the good judgment to pasteurize the ice cream mix. However, the unscrupulous and the ignorant are allowed to do as they please. An eminent commission[7] long ago recognized the necessity of treating ice cream the same as milk, and the members were of the opinion that milk and cream used for making ice cream should conform to the same standards as market milk and that milk and cream so used should be pasteurized. This is their definition of ice cream, "Ice cream is a frozen product made from pasteurized cream, sugar, or pasteurized cream and pasteurized milk and sugar," etc.

Growing sentiment in favor of pasteurization is evidenced by the report of another committee[8] which recommends nation-wide legislation to require the pasteurization of the ice cream mix, the control of which shall be in the hands of the local authorities where the ice cream plant is located.

There is a growing sentiment among those who have studied the problem that the ice cream mix should be pasteurized at a temperature of 150° F. for 30 minutes instead of 145° F. for 30 minutes. The higher temperature is recommended in view of the nature of the materials going into the mix.

The writer in some previous work[12] saw very excellent results obtained by using 150° F. for 30 minutes. The plant in question has used this temperature for pasteurizing for the past 5 years with excellent results from every standpoint. A bacterial analysis of the ice cream is made practically every day and the results will be published elsewhere covering 3 years out of the 5-year period. Fay and Olson[15] in this connection state, "If 150° instead of 145° is used much more efficient reduction in the bacteria count will be assured."

Another safeguard that should be placed around the manufacture of ice cream is a bacteriological standard. It is a well recognized fact that mere numbers of bacteria in a product may mean little or nothing from a disease standpoint. However, it is also well known that excessive numbers of bacteria in a product such as milk or ice cream mean that the product has been handled carelessly at some point in which case there is always danger. Several investigators have proved that it is possible as well as practicable to produce ice cream containing not more than 100,000 bacteria per gram. In this connection Fay and Olson[14] state, "It is possible and practical to consistently produce ice cream containing less than 100,000 bacteria per gram by pasteurizing at 150° F. for 30 minutes and by using utensils only that have been thoroughly cleaned and steamed." In another publication[28] they report, "High bacterial counts indicate carelessness at some point in the manufacturing process which in turn indicates an undesirable, if not unsafe, product. There can be no valid excuse for ice cream containing more than 100,000 bacteria per gram as determined by the plate method."

The writer in some work which he hopes to publish soon finds that it is possible and practicable to produce ice cream with a bacterial content of 100,000 or less. Data collected from 36 ice cream plants located in 5 large cities of Michigan showed that 68.11 per cent of the ice cream produced came within this range. It is believed that the establishment of such a standard, with the precautions that are necessary in producing ice cream of this quality, would be another excellent safeguard against the spread of disease by ice cream.

Along this same line of thought an editorial[11] in the *Journal of the Ameri-*

can Medical Association on ice cream asks the question, "Is it unfair to say that better standards should be maintained in this industry, which has heretofore often escaped suspicion because of a mistaken prevalent belief in the bactericidal effect of cold?"

A third precaution that may be taken is sanitary inspection of ice cream plants. Inspection of city milk plants and of the dairy farms supplying milk to the plant has been practiced by cities for some time. Few, however, have extended this same practice to ice cream plants. There are several score cards for such purposes in existence. The same commission[7] previously referred to has suggested such a score card to be used for scoring ice cream plants. The writer[13] has also proposed a score card for this purpose which has been used with success in Detroit for the past few years. There is no doubt that a score card is an excellent guide for sanitary inspectors and, when used, has the general tendency to improve the quality of the product. In 1917, when inspection was first inaugurated in Detroit, only one sample out of 116 of ice cream tested had a bacterial count of less than 100,000. In 1925, 139 samples out of 201 tested had a bacterial count of 100,000 or less. It would be unfair to give the credit to any one thing. Inspection, score card, general education of the manufacturer, better machinery, and the general tendency, not only in Detroit but everywhere, to produce a better sanitary product—probably all played a part.

SUMMARY

It has been demonstrated by several investigators that exposure to the temperatures used in freezing and storing ice cream cannot be relied upon to kill all pathogenic bacteria that may be present.

Numerous outbreaks of disease, such as typhoid fever, diphtheria, scarlet fever, diarrhoea, and intestinal disturbances have been definitely traced to contaminated ice cream.

It is believed that the same sanitary precautions should be taken by health officers, state and city boards of health in protecting the ice cream supply as are taken with the milk supply.

Three safeguards are suggested:

1. Pasteurizing the ice cream mix at 150° F. for 30 minutes
2. Establishing a bacteriological standard 100,000 bacteria (colonies) per gram
3. Regular sanitary inspection of ice cream plants.

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THE DAY SCHOOL FOR CRIPPLED CHILDREN AT BUFFALO, N. Y., NOW UNDER CONSTRUCTION TO ACCOMMODATE 250 PUPILS. THE PLATFORM AT THE FRONT ENTRANCE IS DESIGNED TO FACILITATE THE LOADING AND UNLOADING OF THE BUSES BRINGING THE CHILDREN TO SCHOOL

AN APPARATUS FOR GENERATING HYDROCYANIC GAS FOR DISINFECTING

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HYDROCYANIC acid in a gaseous form, according to Griffin and Neifert,[1] was probably first used by Bell in 1877 to rid insect cabinets of certain insect pests. Since that time this gas has been used extensively for the fumigation of houses and ships, to rid them of those insects which might be vectors of infectious agents. In 1901 Fulton and Stokes[2] performed a number of experiments with various insects, using cyanide of potash and sulphuric acid for generating the gas. Twenty-five grams of cyanide, 37½ c.c. of sulphuric acid, and 56.25 c.c. of water were used for every 100 cubic feet of inclosed room space. The apparatus for generating the gas was suggested by the one previously used by the U. S. Department of Agriculture and other such departments for fumigating trees and nursery stock.

House flies, wood-eating termites, roaches, bedbugs, mosquitoes, ox-lice, black ants, and rats, mice and guinea pigs, were killed in from one to ten minutes even when some of the insects were placed in test-tubes protected by one to two inches of cotton.

The use of this method was also suggested for disinfecting ships and houses in which such insects as mosquitoes and fleas might be harboring the infectious agents of yellow fever, malaria and bubonic plague and also the disinfection of typhoid bearing flies in camp latrines.

Roberts[3] in 1914 described the fumigation of ships by the use of the so-called "crock," or solid cyanide method, which practically resembles that mentioned above in connection with the Department of Agriculture. One ounce of cyanide, 1 2/3 ounces of sulphuric acid, and 3 fluid ounces of water, were used for each hundred cubic feet. He reported that this procedure killed many rodents, insects, and even bacteria, and was especially efficacious against fleas. As it also killed rats, he mentioned its applicability against bubonic plague.

Creel, Faget and Wrightson[4] have described a large number of experiments upon rats, and they generated their gas by means of an ordinary barrel open at the top, which contained the water and acid solution. They found that 5 ounces of potassium cyanide per 1,000 cubic feet of space is effective in destroying rats.

Liston[5] has described an apparatus used extensively in India in fumigating houses during the existence of plague, which somewhat resembles one described by Young in Circular 139, College of Agriculture, University of California. In a later article Liston and Goré[6] have described a cyanide fumigator which has been satisfactorily employed in fumigating ships.

On making a number of comparative experiments with the dumping method of the U. S. Public Health Service, it was found that the gas was more equably distributed in one of the three deck compartments of a large ship by means of the Liston cyanide fumigator. The total capacity of the three spaces between decks was 32,000 cubic feet. Six pounds of cyanide would destroy all the rats placed even in nearly inaccessible places in the compartment. The maximum concentration of gas was reached in three-quarters

of an hour after starting, the highest concentration being 154 parts per 100,000 and the lowest 33 parts, all concentrations being capable of destroying the exposed rats.

Bail and Cancik[7] and Teichmann[8] have destroyed bedbugs and lice by means of the cyanide method.

DESCRIPTION OF APPARATUS

The apparatus used in the following experiments consists of a brass cylinder 21½ inches high and 7½ inches in diameter, with a dome-shaped cover. A circular opening 3 inches in diameter is made in the top of the dome, and there is also a small opening 1 inch in diameter at the side. The larger opening is closed by a screw cap through the center of which is a plunge valve, regulated by a regulating screw. The interior of the apparatus consists of 2 lead-lined chambers, the upper one 13 inches deep having a capacity of 7,270 cubic centimeters, the lower one 8 inches deep having a capacity of 3,480 cubic centimeters. The upper chamber communicates with the lower one by means of an orifice into which the cone-shaped end of the plunge valve fits, and the regulating cap at the top can open or close this orifice by means of a screw. There are two lead pipes also penetrating the partition between the lower and upper chamber, and these open pipes run up through the upper chamber to within about 2 inches of the top of the dome. Just above one of these pipes is an outlet orifice for a pipe with a nozzled end with a stop-cock which can open or shut the outlet pipe.

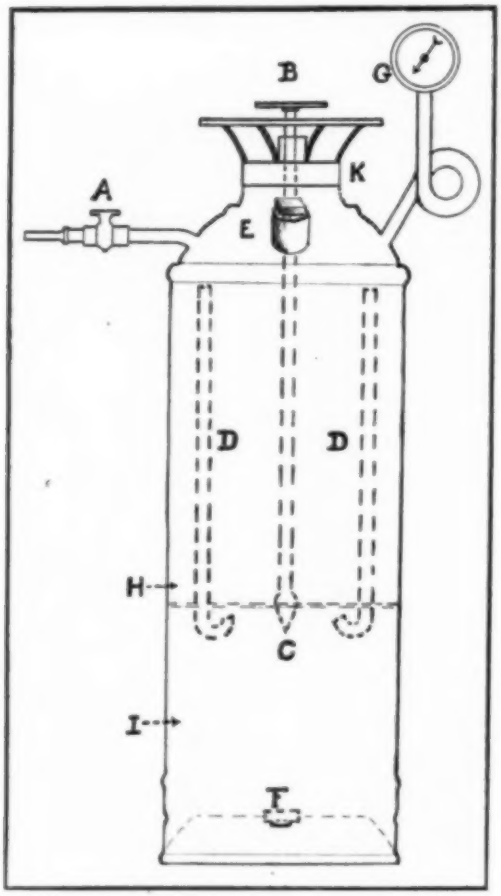
The upper chamber is used for a diluted sulphuric acid which is poured by means of a funnel through the small orifice in the dome. It can then be tightly closed by means of a screw cap. Before pouring the acid into the upper chamber the plunge valve is closed by the regulating screw at the top.

Before pouring the acid into the upper chamber, however, the powdered cyanide is placed in the lower chamber through an orifice 1½ inches in diameter in the floor of the lower chamber. This orifice is then securely closed by a screw cap by means of a special wrench. A pipe with a pressure gauge, by means of which the pressure can be measured also projects through the dome.

OPERATION OF APPARATUS

When the room has been properly prepared for disinfection, the nozzle of the apparatus is placed through the keyhole of the door. If the nozzle will not fit the keyhole the connection can be made by means of a short rubber tube. The apparatus is charged from the bottom opening with a powdered cyanide, or "cyaneggs." The plunge valve between the two compartments is closed. The diluted sulphuric acid is placed in the upper compartment through the small opening in the dome of the apparatus. This opening is sealed tightly by means of a wrench. The

plunge valve is now opened to allow the sulphuric acid to act upon the sodium cyanide and a slight pressure generated. The stop-cock in the nozzle is now opened and the gas pours into the room.



CROSS-SECTION OF APPARATUS FOR GENERATING HYDROCYANIC ACID GAS

A. Stopcock. B. Wheel for turning plunge valve C. C. Plunge Valve. D. Tube admitting gas from lower into upper chamber. E. Screw Cap Opening for introduction of dilute acid into upper chamber. F. Screw Cap Opening for introducing cyanide into lower chamber. G. Pressure Gauge. H. Upper Chamber. I. Lower Chamber. K. Large Screw Head for opening and cleaning out chambers.

PRECAUTIONS TO BE OBSERVED

Before using the apparatus it should be carefully tested by some odorous gas such as hydrogen sulphide to see that there are no leaks, and it should also be tested with water to see that it is fluid-tight. If these tests have proven satisfactory there should be little danger in using the apparatus in the open space of a hallway. However, it should only be operated by men specially trained in this work. They should hold their breath while turning on the stop-cock and then leave the immediate vicinity as soon as possible. Perhaps a better precaution for work of this kind would be the use of the new mask as developed recently by the Chemical Warfare Service.

If rooms or houses are to be fumigated which adjoin inhabited houses, a careful examination should be made to see that the partition walls, floors, and ceilings are gas tight, and all ventilators, water outlets and other such orifices should be tightly closed with thick paper pasted over the orifice. If the walls are not gas tight the inhabitants in the rooms adjoining, and even in the adjoining houses, should be asked to vacate for the short time that is necessary to be used for the disinfection, and they should not return until the operator has carefully ventilated the room and can enter without danger.

When the room is to be ventilated the operator should open the door and hold his breath, raise the nearest window, and leave the room immediately. According to experiments of Bail and Cancik[7] it is safe to enter the rooms from 1 to 2 hours later. To facilitate ventilation an electric fan might be installed.

EXPERIMENTAL RESULTS WITH APPARATUS

The apparatus was used in a room containing about 1,000 cubic feet of air space, practically air-tight, and devised for experiments with illuminating gas. The room is provided with a fan which provides suction through a window communicating with the outside hall and can thus be easily ventilated, the air passing through a large vent through the roof. Roaches used as experimental animals were placed either near the wall on the south side of the room or on the east side. In the first experiment the amount of cyanide and the proportionate amounts of sulphuric acid and water were the same as those used in the experiments described

by Fulton and Stokes, but these were later decreased, as indicated in Table I.

TABLE I

Experiment	Amt. sodium cyanide used	Amt. sulphuric acid used	Amt. water used	Insects exposed	Time exposure	Result
1	250 grams	370.0 c.c.	562.5 c.c.	2 flies, 13 roaches	1 hour	All dead
2	125 grams	187.5 c.c.	281.25 c.c.	7 roaches	½ hour	All dead
3	62.5 grams	93.75 c.c.	140.62 c.c.	5 roaches	15 min.	All alive
4	62.5 grams	93.75 c.c.	140.62 c.c.	8 roaches	1 hour	All alive

Table I shows that with 125 grams of cyanide, roaches can be killed in one-half hour.

In addition to the experiments described, it might be stated that Fulton and Stokes after having carried out this experimental work were able to apply this method practically in a number of instances. An entire house was rid of fleas which were so thick in some of the rooms that they almost obscured the color of the white dress of the owner. By this method five rooms in a hospital and rooms in two private houses were rid of bedbugs. We also attempted to disinfect a steam yacht infested by ants, and although the ants were decreased in number, they were not entirely destroyed. In these experiments the siphon method was abandoned and the cyanide was dropped into the large vessels containing the diluted sulphuric acid.

ANALYSIS OF CONCENTRATION OF HYDROCYANIC ACID IN AIR

The analyses of the concentration of hydrocyanic acid were made according to the method described fully in Liston and Goré's article. This consists of aspirating 5 liters of the air containing the hydrocyanic acid through a dilute solution of sodium hydroxide, and titrating the sodium cyanide formed with a 0.1897 per cent silver nitrate solution, using dilute potassium iodide as an indicator.

When 250 grams of cyanide were used in the thousand cubic feet of air space, an analysis after 15 minutes showed a concentration of 46 parts of hydrocyanic acid per 100,000 parts of air, increasing to 56 parts per 100,000 of air in one-half hour. Both of these concentrations were sufficient to kill rats according to the experiments of Liston and Goré, and we found that one-half the quantity of cyanide would kill roaches in one-half an hour. When 125 grams of cyanide were used there were 38 parts per 100,000 parts of air in 15 minutes and 52 parts in one-half hour.

CONCLUSIONS

A gas tight apparatus can be safely used for generating hydrocyanic acid outside of the room to be fumigated. Roaches exposed freely to the gas can be killed by from 125 to 250 grams of sodium cyanide for every 1,000 feet of air space.

Further experiments should be performed to determine if such a concentration will destroy fleas, lice, bedbugs and mosquitoes.

When the proper concentration for the various insects mentioned can be determined, it would seem that some such apparatus could be used not only to destroy the vectors of such diseases as bubonic plague, yellow fever, malaria and typhus, but also to get rid of such annoying insects as bedbugs and roaches.

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AUTOMOBILES AND PUBLIC HEALTH*

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PUBLIC HEALTH workers naturally are interested in automobiles as they affect public health, particularly as they may affect it adversely. It is not intended to undervalue in any way the usefulness of motor vehicles. We are not unmindful that many lives are saved and that suffering frequently is relieved more promptly due to the rapid transportation by the automobile. It is likewise appreciated that health is promoted through the recreation of motoring, and people, seeking better health, are moving out into less populated, country districts made accessible by motor cars. Outings into the country bringing health and happiness to many are more frequent even among the less fortunate.

These advantages and others are recognized, but it is quite impossible to measure the higher level of health obtained, or to estimate the number of lives saved in this manner. This phase of the automobile's story, while interesting, requires no more than passing comment.

On the other hand, due to the usually efficient methods of recording accidents and other mishaps occurring almost daily in every city, it is possible to state rather accurately the number of accidents and deaths resulting from the use of motor driven vehicles. Statistics recently published by the Department of Commerce indicate that the number of accidents are yearly increasing. This increase is absolute and not relative. It is gratifying to note that accidents are decreasing in proportion to the number of cars in use, although the number of accidents is still large. Measures designed to minimize the number of occurring accidents, however, are not usually among the duties of public health workers. Their real interest lies in the substances used or proposed for use as motor fuel, and in the gases exhausted.

The motor fuels in general use are gasoline, benzol, and benzol-gasoline mixtures or blends. While these unburned substances have toxic properties they hardly constitute, under the conditions used as motor fuel, public health hazards. Occasionally certain compounds are added to these fuels in order to increase their efficiency. Notable among these has been the use of the compound, tetraethyl lead with a halogen carrier, which, when added to gasoline in very small quantities, acts as a negative combustion catalyst; thus making it possible to use a lower grade gasoline and to employ engines of a higher and more economical compression ratio.

The unfortunate occurrence of deaths among workmen engaged in the manufacture of tetraethyl lead gave this compound considerable publicity. This source of danger, of course, was purely a manufacturer's problem, but it precipitated a discussion of the use of ethyl gasoline as a public utility. While it has been shown that this treated gasoline, as used at present, hardly constitutes a public health problem,[1] it serves to illustrate the alertness of public health workers to the possible hazards arising from the use of new compounds. The unprejudiced study by health workers of new substances proposed for use by the public is commendable, but care must be used in condemning unjustly a new discovery in

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order not to interfere with progress in other sciences.

The products of these fuels after combustion contain the highly asphyxial carbon monoxide gas which claims a heavy toll in human lives in every community, and this gas constitutes a real public health hazard. Although the public is constantly reminded of its danger, and publicity has been given to experiments conducted by the U. S. Bureau of Mines which have demonstrated that a fatal concentration of fumes is exhausted from a motor car within considerably less than 20 minutes in a single-car garage in which the engine is permitted to "idle," motorists do not seem to realize the deadliness of these fumes or the swiftness with which they overcome the victim. There is a superstitious belief that an engine will stop running for want of oxygen before the atmosphere has become fatally charged with the gas. An engine, as we all know, will run in an unventilated garage for hours beyond the time necessary to kill animal life.

While it is not the purpose of this paper to enter into a discussion of the symptoms, diagnosis and treatment of carbon monoxide asphyxia, brief mention of the important steps in diagnosis and treatment may have some value.

Of the symptoms, none are diagnostic and they may be absent entirely. Perhaps more typical among the symptoms when present are painfulness of the eyeballs, particularly on pressure, accompanied by a feeling of tightness across the forehead, headache, weakness, dizziness, loss of muscular control, and collapse. The symptoms depend largely upon the blood saturation, the degree of muscular activity and individual idiosyncrasy. Symptoms do not appear with a blood saturation much less than 20 per cent.

A tentative diagnosis of carbon monoxide poisoning or asphyxia may be made from the history of possible exposure together with the symptoms produced, but a positive diagnosis must determine the degree of saturation in the blood. The pyrotannic acid method, used in conjunction with a set of standards based on color reaction designed at the Bureau of Mines,[2] is the simplest means of determining the blood saturation.

The emergency treatment of this form of asphyxia consists in removing the victim to fresh air, and if breathing has stopped or appears in but occasional gasps, no time should be lost in resorting to artificial respiration which is best performed by the prone pressure method of Schaefer. If in addition to this procedure, pure oxygen or a mixture of 5 per cent carbon dioxide in oxygen can be administered, beginning as soon as possible, recovery is more rapid and the after effects are less serious. After consciousness is regained, the treatment is largely symptomatic.

In view of the number of deaths occurring almost daily in cold weather among car owners who run their motors in closed places in order to either warm up the engine or make adjustments, repeated caution and instruction in emergency treatment seems necessary.

Aside from this source of danger from automobile exhausts in closed or poorly ventilated enclosures, greater numbers of people may be exposed to this gas while passing through vehicular tunnels and poorly ventilated passage ways. Considering that carbon monoxide averages about 7 per cent in exhaust gas, and an atmosphere containing but 1 per cent is sufficient to cause death in a very short time, it is obvious that tunnels and partly covered area ways must be provided with adequate ventilation to render the air content harmless. In order to insure safety in passing through vehicular tunnels and protect workmen and traffic officers who are subjected to the fumes for many hours during the day, it became necessary to determine the maximum concentration in air of carbon monoxide permissible with safety. You are no doubt familiar with the painstaking experimental work in connection with the Hudson tubes conducted by Professor Henderson, and the

corps of scientists of the U. S. Bureau of Mines, which lead to a permissible maximum concentration of carbon monoxide, determined on the basis of physiological tests, of 4 parts per 10,000 for a period of one hour.[3] The determination of the percentage of carbon monoxide in any given atmosphere can be made either by means of the pyrotannic acid apparatus or the iodine pentoxide method and apparatus provided only an occasional estimation is desirable.

Attention recently has been attracted to the possible high percentage of carbon monoxide present in the air at certain points along well-traveled thoroughfares of our large cities. Here almost constant streams of passing automobiles are liberating this gas.

Henderson and Haggard[4] found 0.01 per cent of carbon monoxide to be a frequent condition in various part of Fifth Avenue, New York City; 0.02 per cent was not unusual and even more in limited areas and for short periods. This condition cannot be considered serious since Jones, Yant & Berger[5] of the U. S. Bureau of Mines, have shown that the smoker who inhales has similar concentrations of carbon monoxide, periodically, in the air of his lungs without apparently noticeable effects. There is a difference, to be sure, in the length of exposure as a rule.

The percentage of carbon monoxide found in the street air was determined from grab samples, and may not represent the true conditions. Accurate data can be obtained by means of an automatic device developed at the research laboratory of the U. S. Bureau of Mines,[6] which analyzes and records continuously the fluctuations of CO concentrations. If the concentration at any time exceeds 4 parts per 10,000 this recorder gives warning through an attached bell ringing system. The principle involved in this apparatus is based upon the increase in temperature resulting from the chemical reaction of CO and O in the presence of a catalyst, and is measured by thermocouples and recorded by means of a recording potentiometer. The recorder is not appreciably affected by the presence of other gases and is sensitive to 1 or 2 parts per million. It has been in operation at the Liberty Tunnels in Pittsburgh for the past year. It seems that if we desire definite information of actual existing conditions in the above mentioned places through which the public passes a continuous record is indispensible.

CONCLUSION

The present public health problem so far as the automobile is concerned lies chiefly in the possible hazardous effects on pedestrians of carbon monoxide fumes discharged in the exhaust gases. The extent of the harmfulness of this gas is best determined by a continuous record of the fluctuations in concentration. The final step lies in proper control of tunnels and passage ways through the operation of an adequate ventilating system.

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SCHOOL SANITATION FROM THE STANDPOINT OF THE SCHOOL ADMINISTRATOR*

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THERE are at least three large outstanding needs to be met in the administration of a program of school sanitation. These needs are: first, a program that has been developed and tested on a strictly scientific basis; second, a type of school organization and control that makes possible successful and efficient results with the total school population in the entire area concerned; and third, an adequate system of school revenues that makes possible the financing of a complete and equal program for all school children.

A SCIENTIFIC PROGRAM OF SCHOOL SANITATION—THE FIRST GREAT NEED

The problem of the program of school sanitation is first of all a problem of research. At the very outset it must be understood that the research activities necessary to the discovery of basic theories and principles of school sanitation do not belong in the field of school administration. The school administrator, however, must be held responsible for a knowledge of the important results of research and, in cases of conflicting theories and claims, he will be expected to know how to select the authority worthy to be followed. At present the popular and generally supposed desirable program for the sanitation of school buildings and health of school children includes elements which not only have no scientific basis but which have been proved to be often positively injurious to health. Present standards of school ventilation furnish abundant proof of the statement.

Dr. Winslow has presented the modern scientific conception of ventilation. He has clearly demonstrated that the theory of ventilation underlying the present standard of 30 cubic feet of fresh air per minute per pupil not only was never justified, but that it is now thoroughly discredited by a preponderance of evidence.

Present standards of school ventilation are based upon the supposed existence of poisonous or injurious substances in the exhaled air of occupied rooms. Consequently, school ventilation has become a problem of moving the air out of classrooms or diluting it by forcing in fresh air at a commonly agreed rate of 30 cubic feet per minute per pupil. Such a standard can be attained only by mechanical means; hence the installation of plenum and exhaust fans and the gradually increasing multiplicity of mechanical ventilation devices and apparatus extending all the way from the basement to the roof.

Mechanical ventilation with its standard of 30 cubic feet of air per minute per pupil has been urged and forced upon schools as a positive means of safeguarding and improving the health of school children. However, present scientific knowledge, repeatedly confirmed since the work of Hermans in 1883 down to the findings of Winslow, Palmer, Lee and others, shows that standards of classroom ventilation should be based primarily on temperature and other physical properties of air. The shift in the center of gravity, so to speak, of the problem of ventilation was cogently expressed 12 years ago by

* Read at the Joint Session of the Child Hygiene Section of the American Public Health Association and the American Child Health Association at the American Health Congress, at Atlantic City, N. J., May 20, 1926.

Dr. Lee, "The physiological problems of ordinary ventilation have ceased to be chemical and pulmonary, and have become physical and cutaneous."

Let us review briefly some aspects of the present status of mechanical ventilation.

PRESENT STATUS OF MECHANICAL VENTILATION

Practically half of the states[1] have adopted the standard of 30 cubic feet of air per minute per pupil. In some states, this has been done by legislative act and in others by regulations having the force of law. These states, with certain specified exceptions, require the installation of a system of ventilation capable of delivering 30 cubic feet of air per minute per pupil. It is startling but nevertheless it is a fact that, in spite of 40 years of accumulated knowledge and especially 15 or 20 years of overwhelmingly convincing evidence, approximately 12 millions of public elementary and secondary school pupils attend school every day in states having these archaic laws and regulations on school ventilation! This number represents more than half of all the pupils in the public elementary and high schools of the United States.

The New York State Commission on Ventilation and others have subjected present standards of ventilation as exemplified by modern systems of mechanical ventilation to various scientific tests. The verdict is against mechanical ventilation and in favor of modified window ventilation. There are certain rigid tests which the school administrator can and should apply to mechanical ventilation. Considering the length of time during which the installation of mechanical ventilation has been required by law and the ample time it has had to demonstrate its value and usefulness, it is fair to apply the test, "How has it worked?"

Bearing in mind that the standard of 30 cubic feet of air per minute per pupil requires mechanical ventilation, it has been found that in some states the law does not apply to rural schools; in other states, the law does not apply to one story school buildings and in still others it does not apply to small school buildings having from 1 to 6 rooms. Crowded school room conditions may exist in a rural school, or in a one-story school building, or even in a small school. Why then should children attending these types of schools be excluded from the supposed safeguards of these laws and regulations? It is true also that in states having these laws and regulations, ventilation systems can be installed which will meet the legal requirements so infrequently and intermittently that the system may be disregarded altogether so far as delivering 30 cubic feet of air is concerned.

In addition to these things the so-called compulsory ventilation laws are so framed and administered that the element of compulsion when it does apply, applies only to the installation of ventilating systems. We have compulsory *installation* but no compulsory *operation*.

But in general, the cities of the United States are firmly in the grip of an obsolete standard of school ventilation so far as the installation of mechanical equipment is concerned. Something of the magnitude of the situation is indicated by the fact that more than 6 million children attended school in 1920 in the cities of states which require 30 cubic feet of air per minute per pupil. Since millions of school children in America have been provided with mechanical ventilation equipment, it is pertinent to inquire to what extent these ventilating systems are actually operated after they are installed.

A recent study[1] shows that it is almost a universal practice never to operate these systems regularly and continuously throughout the school year. Very few cities even claimed to operate these ventilating systems outside of the heating season, when windows can be opened. According to the theory underlying mechanical ventilation, the supposed need of 30 cubic feet of air per minute per

pupil would exist during the *non-heating* as well as the *heating season*. According to the theory it would be as necessary to remove foul and vitiated air from classrooms in May as in December. But the test of use is not yet fully applied. In many instances even during the heating season, the typical mechanical ventilation system is not operated, as a rule, except on days when the outside temperature is low and the regular heating system cannot furnish sufficient heat for the classrooms. Under these conditions the ventilation system is operated in order to supply the necessary additional amount of heat.

Evidence gathered on operating policy shows that systems of mechanical ventilation, when they are operated, are operated primarily for heating purposes and not for ventilation. In a certain real sense, then, instead of having mechanical ventilation we have auxiliary heating. It appears that mechanical ventilation in the schoolroom is largely an engineering fiction.

The status of mechanical ventilation, as revealed by recent investigations [1] is more appalling still. In a majority of typical mechanical ventilation systems in new school buildings sufficient direct radiation is placed in classrooms to maintain the required temperature without the use of the ventilation system. In these instances it is safe to conclude that the installation of mechanical ventilation is largely to satisfy the law or tradition and that there is no intention to operate the system after it is installed. Some of those in charge have been frank enough to say that this is true. This seemed to be the situation in New York City.

Investigation also showed that practically all buildings at Columbia University were equipped with the typical system of mechanical ventilation. Observation and official information was that not a single one of these plenum basement fans ever turned during the whole year. The same situation seemed to exist in the public school system of New York City. The large plenum fans and accessory apparatus were idle.

The cost of the heating and ventilating contract of a typical new school building in New York City was analyzed, the contract amounting to $137,939. Of this amount the ventilation system alone cost at least $55,000. In one school building, then, we see that $55,000 was practically thrown away by this policy of non-operation. In this way, during the short period of 17 months it was estimated that New York City wasted practically $1,500,000 on ventilation equipment for new school buildings.

Compliance with ventilation laws and regulations now discredited by scientific research, is costing taxpayers, chiefly in our cities and towns, millions of dollars annually. Millions of dollars from bond issues and tax levies have been translated into idle, semi-idle and useless mechanical ventilation devices and paraphernalia. The conclusion is inevitable. Mechanical ventilation has not worked.

ACTION OF ENGINEERING SOCIETIES

In the past, societies of heating and ventilating engineers energetically advocated the standard of 30 cubic feet of air per minute per pupil and sought to have this standard embodied in the laws and regulations of states. Doubtless they were aided by other well meaning agencies, especially up to 10 or 15 years ago.

At the present time the American Society of Heating and Ventilating Engineers maintains a research laboratory. One of the aims in maintaining this laboratory is to discover and prescribe the air conditions which are most conducive to comfort and health. A concrete illustration is the society's 1924 preliminary draft of a "Code of Minimum Requirements for the Heating and Ventilation of Buildings." The proposed code was drafted with a view to its various sections being adopted into the laws and building codes of states and cities. It is interesting to know that this preliminary draft did

not declare boldly for the old standard of 30 cubic feet of air, but on the other hand, it incorporated a "Synthetic Air Chart." The significant thing about this "Synthetic Air Chart" is that it proposes standards not only in terms of temperature, humidity, and air motion, but also in terms of dust, bacteria, odors, and carbon dioxide. Thus an engineering organization expects to tell the public what are the desirable conditions for the health of school children, while basing their standards upon several factors discredited by decades of research.

In defending mechanical ventilation in connection with the procedure just described, a dean of an engineering school, who is also a directing head of this research laboratory, rejects the conclusions of the American Public Health Association and prophesies that engineering research will yet find more definite proofs of some of the physiological problems connected with ventilation. He is quoted in the *Heating and Ventilating Magazine* of April, 1926, as follows, "Some day, we will prove more definitely just how many air changes are desirable."

The question may well be asked, "Is it for the public good that heating and ventilating engineers now take over functions hitherto left by common consent to eminent sanitarians and authorities on health?"

School administration will welcome new information regarding the problem of ventilation from any research agency. However, it must be stated here and emphatically reiterated that the school administrator must look for guidance to the research activities of authorities on public health and allied fields and to the conclusions arrived at by responsible medical societies and health associations.

When it comes to a choice between a standard of health proposed by the ventilating engineer on the one hand and the public health authority on the other, the public health authority must be followed. The logic of the situation is against the ventilating engineer.

CONCLUSIONS REGARDING VENTILATION

The evidence from all sources justifies the following conclusions:

First, school administrators should cooperate in the movement to secure the repeal of laws and regulations requiring 30 cubic feet of air per minute per pupil.

Second, the most desirable method of safeguarding and promoting the health of school children in respect to the sanitation of school buildings is to confer final authority for approving all plans and specifications upon the State Board of Education, or the State Superintendent of Public Instruction. A good illustration of a desirable law will be found in the school code of Maryland.

Third, school administrators now engaged in planning school building programs should give serious consideration to the general method of schoolroom ventilation, recommended by the American Public Health Association. The method is that of ventilating schoolrooms "by fresh untreated outdoor air, admitted at the windows with gravity exhaust ducts for removing vitiated air from near the ceiling."

Fourth, superintendents in cities now under present laws and regulations should if possible, seek some special arrangement whereby at least one typical new school can be equipped with window gravity ventilation for test and demonstration purposes.

EDUCATIONAL VALUE OF SANITARY AND HEALTH EQUIPMENT OF SCHOOLS

Before closing this discussion on school ventilation it will be exceedingly worth while to examine at least 2 specific criticisms raised by ventilating engineers against the window-gravity method of ventilation.

First, it is claimed that window-gravity ventilation will not keep down odors. In making this criticism the advocates of mechanical ventilation do not take into consideration the modern health programs of public education which emphasize healthy living through the practice of good health

habits including the bath. The elimination of odors is a problem in the teaching of personal hygiene. An investment in a well planned system of shower baths will be more efficacious and exceedingly more educative than the installation of plenum fans.

Second, it is claimed that the teachers cannot be relied upon to open and regulate the windows properly. They will become too busy, it is said, and neglect the ventilation of the room. The view of some engineers that ventilation should be controlled from the basement and must be made a matter of no concern whatever to the occupants of the classroom is at variance with the modern conception of classroom activity. The classroom, with teacher and pupils working together, represents a social situation which admits of pupil responsibility and pupil participation in matters affecting their comfort and well being. In this kind of situation, ventilation needs may be brought to the attention of the "busy" teacher by some of the pupils or, indeed, pupils designated for the purpose may regulate the windows themselves. In making this criticism the advocates of mechanical ventilation have not given due consideration to the principles and philosophy underlying modern schoolroom activity.

Enough has been said to suggest the desirability of utilizing the sanitary and health equipment of the school as agencies for encouraging good health habits and practices. It is bad psychology and poor educational leadership to plan, equip, or operate a school building in such a way that the pupils will be oblivious to the things that are being done for their comfort and health. The educational values of various situations presented in a modern school building are almost unlimited. Consider the possibilities wrapped up in the provisions for, and the activities going on in connection with, the cleaning of the building; drinking, bathing, and toilet facilities; heating and ventilation; lunch rooms, playgrounds and all the other services and provisions for the health of school children. The wise school administrator and the curriculum makers of the school system will seek to get these things over into the daily lives of pupils and the only effective way is to make the whole activity of the school, as near as possible, a joint enterprise between pupils and school.

The organization of a school toward the proper utilization of all school health agencies and equipment may be counted upon to go a long way toward remaking the attitude of the community toward health. Cases are on record where such a simple beginning as the installation of sanitary drinking fountains to replace water buckets and dippers caused a series of forward steps which culminated in the establishment of a thoroughly organized and adequately financed county health unit. Such results cannot be secured, as a rule, when installation of equipment and inauguration of services are allowed to be taken as a matter of course either by the school or community. At each step of the way there must go along an active plan of education for the proper utilization and understanding of the services provided.

A DESIRABLE TYPE OF SCHOOL ORGANIZATION AND CONTROL—THE SECOND GREAT NEED

We not only must have standards scientifically and educationally sound, but we must have a type of school organization and control that will make possible the elimination of the one-teacher rural school and other small school centers as rapidly as conditions will permit.

Cities as a rule have a desirable type of school organization and control. As long as education for rural children is organized on the small school district basis, usually accompanied by small and inadequate buildings and grounds, it will be almost impossible to provide standard sanitary service systems and other necessary equipment for the health of these children, to say nothing of the difficulties of providing for proper supervision and coördination of activities. The number

of states in which education is organized on the small school district basis has recently been placed at nineteen. When the county, or other large unit, has been substituted for the small district unit, material progress can be made.

ADEQUATE SYSTEM OF SCHOOL REVENUES —THE THIRD GREAT NEED

In conclusion, it must be borne in mind that even with standards scientifically and educationally sound and a desirable type of school organization and control it will still be impossible to finance the program so that it will be available to all children even to a reasonable degree, without an adequate system of school revenues. More and more these revenues must come from state rather than local taxes. There are poor school districts and counties in many states which are unable to finance a minimum program from local revenues. Under present revenue systems and methods of apportioning school funds, there are many districts and counties which cannot provide even the beginnings of minimum requirements for school sanitation and health.

We have dedicated ourselves in America to the great ideal of giving to every boy and every girl "a fair start and an equal chance in the race of life." It is for us to begin this great task with the thing of most fundamental importance and guarantee to every boy and girl a healthful school environment and, as near as possible, a strong and healthy body. In order to accomplish this we must first of all discharge our obligations as citizens before we can utilize properly our knowledge and skill as health workers, for the problem finally becomes one of constructive statesmanship.

REFERENCE

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ONE CORNER IN THE MILK ANALYSIS LABORATORY OF THE BUFFALO DEPARTMENT OF HEALTH WHICH GUESTS AT THE FIFTY-FIFTH ANNUAL MEETING ARE INVITED TO VISIT

PERRYSBURG—A MECCA FOR HELIOTHERAPY

ROBERT E. FITZGERALD

J. N. Adam Memorial Hospital, Perrysburg, N. Y.

THE J. N. ADAM Memorial Hospital at Perrysburg, N. Y., has the distinction of being the first municipal hospital in the United States to introduce the Rollier method of heliotherapy. Here hundreds of cases come for treatment every year until Perrysburg has come to be to the United States what Leysin is to Europe.

This hospital—where the city of Buffalo cares for its cases of incipient pulmonary and all forms of surgical tuberculosis—is delightfully situated among the Cattaraugus hills about 1,600 feet above sea level. Patients basking in the sun on the pavilion porches have a panoramic view of nearly fifty miles of hills and farmlands. On a clear day the foundry towers and church spires of Buffalo and the Canadian shore creep into the vista. The purity of air—free from manufacturing dust and smoke—unobstructed sunshine, complete rest and nourishing food give the men, women and children who come to Perrysburg an extended lease on life.

HISTORY OF THE PERRYSBURG HEALTH RESORT

Perrysburg is the result of the altruistic efforts of the late Dr. John H. Pryor and the Hospital Commission of Buffalo during 1909 and the generosity of the late J. N. Adam, at one time mayor of Buffalo. Dr. Pryor and the group of men comprising the Hospital Commission knew the need for a municipal tuberculosis hospital. In the spring of 1909 the bill introduced into legislature authorizing the city of Buffalo to construct, equip and maintain a hospital for the treatment of incipient tuberculosis, be-

ON THESE SPACIOUS PORCHES PATIENTS AT PERRYSBURG REST AND TAKE THE SUNLIGHT CURE

came a law. Dr. Pryor had been instrumental in the introduction of the bill. A few months later the Hospital Commission recommended the construction of such a hospital to the city council.

In the selection of the site Dr. Pryor and those men realized the beneficial health attributes of Perrysburg. When Mayor Adam was approached, he donated the land on which several buildings have since been erected.

SOMETIMES WORK IS PLAY

HOSPITAL FARM AND ZOO

Originally the hospital grounds covered 293 acres, but as need has arisen, more land has been added and several buildings modernly designed and appointed have been erected. Only recently two large pavilions, accommodating two hundred patients have been opened. Gas and water wells have been drilled on the grounds adjoining the hospital and the most modern implements have been added to the farming equipment. The farm of 500 acres managed in connection with the hospital is one of its valuable economic assets. About 250 acres are workable, furnishing the fresh, seasonable vegetables for the patients and fodder for the cattle. The remainder of the tract which is woodlawn is occupied by the chicken houses and stables. Practically all the milk and eggs needed for the patients are obtained from the 60 Holstein-Fresian cows and the 2,000 white leghorn hens. Listed among the livestock are 100 hogs. In the acreage of woods on the farm are nearly 3,000 maple trees which furnish more than an adequate supply of maple syrup for the hospital tables.

The J. N. Adam Memorial Hospital boasts of another unique feature—it is the only hospital in the

THE JUVENILE TENDERFOOT AT PERRYSBURG IS UNKNOWN. UNDAUNTED BY SNOW AND FREEZING TEMPERATURE THE YOUNGER PATIENTS ENJOY WINTER SPORTS UNENCUMBERED BY HEAVY OVERTHINGS

world having a zoo for the entertainment and pleasure of its patients. Each year several different species of animals have been added, so that now child patients have an unusual opportunity to study animal life at first hand.

PLAY AND AMUSEMENT—RESTORATIVE FEATURES

In summer the children play and frolic over the extensive hay fields and woodlands. In winter, with only the protection of a loin cloth, they ski, coast and toboggan on the snow covered farm hills—their delicate, sick bodies in the meantime being rebuilt and hardened by exposure to the direct sunlight. Forests of beds by day and by night occupy the pavilion verandas and despite the severity of the weather the patients sleep out of doors.

Bed patients who are still unable to stroll to a favorite haunt for their daily sun bath are made quite happy in their porch bed by radio concerts during the day as well as in the evening. Earphones have been placed at every bedside so that patients at Perrysburg by a simple tuning-in gesture are whisked off to a concert in Memphis or a prize fight in New York. For the more active patients there are motion pictures every weekend and musical and dramatic programs are given frequently for adults and children. Every conceivable scheme is employed to free the hospital of the usual institutional atmosphere.

Since its establishment the successors to the office of the late Mayor Adam have given their official coöperation and personal attention to the management and development of the hospital. Today Perrysburg is a mecca for doctors and nurses from various sections of the United States and Canada who are seeking scientific information of the practical application of heliotherapy. Visitors to Buffalo are welcome at Perrysburg.

MILK SANITATION *

SIGNIFICANT progress has been made in the national unification of milk control. During the past three years the following 10 states have adopted the U. S. Public Health Service milk sanitation program: Alabama, North Carolina, Texas, Virginia, Tennessee, South Carolina, Missouri, Kentucky, Arkansas and Louisiana. Within the same time 90 cities in these states have adopted the standard milk ordinance. Both these acts on the part of the states and their cities have resulted in the improvement in milk sanitation and an increase in market milk sales.

A careful measurement of results of the application of the standard ordinance has been made in Alabama. In Montgomery, Florence, Selma, Tuscaloosa, Mobile, Huntsville, Gadsden, and Albany-Decatur, there has been an average increase of well over 80 per cent in milk sanitation since the passage of the milk ordinance. The average production improvement in these 8 cities has been 66.9 per cent and the individual ratings for all except one of the 8 cities are now well over 90 per cent. This fact signifies that production sanitation in these 8 cities has been brought to a high level within a comparatively short time.

When the work began, pasteurization ratings in these 8 cities were practically

* Abstract of the Report of Progress on the National Unification of Milk Control accepted by the U. S. Public Health Service which was prepared by the Committee on Milk Sanitation of the Conference of State Sanitary Engineers and read at the Seventh Annual Meeting of the Conference of State Sanitary Engineers, June 7, 1926, at Buffalo, N. Y. The report was prepared by Leslie C. Frank.

zero. In 4 of the cities the percentage increase in the pasteurization ratings has been large, but the other 4 cities are without pasteurization facilities. In Florence a plant has been built to pasteurize all the city's milk supply which will advance its pasteurization rating 100 per cent. Unfortunately, sentiment against pasteurization in three cities is strongly against pasteurization, but as the educational work continues the opinion will be swayed toward pasteurization. In the meantime, consumers are being protected by careful supervision of dairies and of the handling of the milk.

Figures indicate that there has been an actual increase in market milk consumption which can in all probability be traced to the application of the Standard Milk Ordinance. In a large number of cities now operating under the Standard Milk Ordinance, the passage of the ordinance was urged by the dairy industry. The National Dairy Council has endorsed the U. S. Public Health Service program of milk sanitation. Another evidence of the support of the Standard Milk Ordinance by the dairy industry is the fact that only two or three court cases have arisen in connection with milk control in all of the many cities now operating under the ordinance. None of these court cases has been decided against the city.

"In the ten states which have thus far adopted the Standard Milk Ordinance, the many cities which have enacted the ordinance into law include the largest cities in those states, cities with as small a population as 5,000, cities which had previously done no milk control work whatever, cities which have spent many years in improving milk supplies, cities which are willing to require 100 per cent pasteurization, and cities which are largely opposed to pasteurization.

"It may fairly safely be stated, therefore, that the ordinance is so framed as to be attractive to the majority of types of cities. However, it should be noted that none of the states in which the ordinance has become standard has cities of over 500,000 population and it still remains for actual future experience to demonstrate whether the ordinance will be attractive to such large cities.

On the other hand, it is suggested in this connection that the principal problem with which the individual states have to deal is not that of our largest cities, as these in general have done far better milk sanitation work than the average in the state as a whole; but that their principal problem is rather that of our many smaller cities which are in general not yet advanced in milk control methods."

HEALTH OF THE SCHOOL TEACHER

Up to the present time there has not been a correct appreciation of the relation between the teacher's health and his efficiency. Certain industrial concerns have been much more interested and successfully so in the health of the workers than the general public or educational authorities have been in the health of the teacher.

Data on the teacher's health is not sufficient to warrant any very definite statements, but the fact of equal amount of time lost with industrial workers has been noted in England. Mr. Smith concludes that minor ailments cause most of the absences from school of the teachers, dragged along over a period of time. He suggests two methods of reform: (1) "A more rigorous standard of fitness for all entrants," most carefully maintained

(2) "The application of simple hygienic laws and psychological principles to the teacher's life"

The greatest factors causing illness, he considers, are due to large classes, unsanitary school conditions, the mental fatigue attendant on the work—all "rendering him liable to certain forms of infection."

The writer might go a step further in the analysis of conditions and suggest that teachers for their own benefit use more common sense in the ventilation of their school rooms.—Professor Frank Smith, *World's Health*, July, 1926.

CREAM QUALITY AND SANITARY CONTROL*

J. H. SHRADER, PH.D., FELLOW A.P.H.A., AND R. S. CRAIG

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FOR MANY YEARS public health officials have been insistent upon sanitary conditions of production and handling of milk. The public at large and even business men, oppressed as they are with the multiplicity of laws, taxes and other government regulatory burdens, strongly support milk supervision. But the kindred problem of cream control, intimately associated as it is with the production and consumption of milk, seems to have received but scant attention except insofar as the trade has learned from experience certain lessons in the value of sanitation and quality.

That top milk is widely used in formulae for the household preparation of the baby's milk, that cream is an increasing ingredient in ice cream, that the latter is being recognized in an ever greater degree as food, and that ice cream is being increasingly used by children, invalids and hospitalization cases, indicate to some extent the public health aspects of the cream trade. Even commercial considerations are now calling attention to the desirability of improving the quality of cream. R. C. Potts of the U. S. Department of Agriculture[1] points out the advisability of raising the quality of cream to the extent of declaring "that the biggest problem confronting the dairy industry is improvement in the quality of our dairy products, especially our butter and cheese," and makes a significant statement that "economic relations are determined by economic conditions."

Redfield and Stocking[2] inspected about 150 creameries in 25 states and report that the sanitary conditions of the creameries per se were very satisfactory but there were notable exceptions. Flash pasteurization was commonly encountered. They show clearly that these creameries use all kinds of cream from that of one day old to shipments older than eight days. Off flavored cream was found in all sections visited, predominantly in such sections as permitted the delivery of cream from four to six days old, and that dirty utensils have been reported to be a contributing cause to such flavors. It is interesting to note that they observe that the very factors which health officers require under the general concept of sanitation are necessary to improve the quality of butter, namely: prompt delivery, cleanliness and refrigeration.

That such considerations have been neglected is admitted by the creamery people themselves. F. W. Bouska[3] of the American Association of Creamery Butter Manufacturers states: "Inability of production of butter to keep up with the increase in population has crowded butter making into less favorable territory and in the hands of farmers who never before were creamery patrons." Moreover, he says that the "possession of the best territory by more intensive dairy manufacturers and the increasing cost of farm labor have made it more difficult to care for cream and more difficult to deliver it frequently," and the "increased scarcity and the rising price of butter have caused creameries to solicit cream wherever it may be found," although in all fairness to the industry it must be pointed out that all creameries want good

* Read before the Central Atlantic States Association of Dairy Food and Drugs Officials at Harrisburg, Pa., April, 1926.

cream and many are making great efforts to improve the quality of their supplies.

Perusal of 23 municipal ordinances dealing with milk control disclose that 18 place cream requirements in parallel to milk requirements, but they usually make an exception in the case of bacteria counts, whereby they allow from one to six times as many bacteria in cream as they do in milk.[4] In most instances, however, such declaration of requirement does not seem to be an actual requirement in fact.

CREAMERIES INSPECTED

In order to ascertain just what are the conditions obtaining in cream production and handling, we inspected cream production and handling facilities at 15 creameries in Virginia, 4 in West Virginia, 41 in New York state, 30 in Pennsylvania, 10 in Maryland and 27 in the states of Illinois, Iowa, Michigan, Ohio and Wisconsin. These creameries were engaged primarily and quite generally in handling cream for butter making. They would ship milk or condense the skimmed milk or make milk powder when the market conditions were favorable, but as a rule they were engaged in the manufacture of butter. At times the sweet butter was stored for the purposes of reconstituting milk. In other words, they were floating on the milk and cream shed and were ready to manufacture and send their products to whatever constituted a profitable market.

Generally speaking, we found that cream was delivered to the creameries from once a day to once a week, that it is received at the creameries in all stages from freshness to sourness, that most of it is farm separated, that it is held on the farms in all stages from open cans floating in horse troughs to well equipped dairy houses, and that it is produced under conditions varying from hog inhabited stables to the last word in dairy barns. In some cases, inspectors had never visited the plants or farms. Some creamery managers knew that such conditions should be corrected but the competition of nearby creameries for any kind of cream precluded much or any pressure on the farmer. Pasteurization (after a kind) was usually practiced by the creameries but it ranged all the way from the outlawed flash system to standard procedure. Some plants were spotlessly clean while others smelled as bad as a reduction plant, and pipes had not been taken down and cleaned since no one knew when. However, scattered throughout the above region were plants which were kept in a high state of sanitation and whose managers were keenly alive to the advantages of availing themselves of the last word in scientific milk and cream control work.

Particularly was this true almost without exception with regard to the New York City cream shed. We found that those creameries in the states of New York and Pennsylvania which shipped cream to New York City not only equalled in cleanliness the milk shipping "creameries," but the cream was in every case separated at the plant from the milk produced on farms which were as generally inspected as those which produced the regular milk supply. It is true that for a while temporary permits were granted to midwest creameries which were not under real New York inspection, but such temporary expedients have been discontinued since the beginning of the year so that now their cream control is on the same basis as their milk control—doubtless subject to such limitations of effectiveness as now obtain in the case of the latter.

EQUAL SANITARY STANDARD FOR CREAM AND MILK

It is thus apparent that from the standpoint of what is generally printed, and particularly in view of what has been demonstrated to be possible, and furthermore in view of the evident desire of the trade for an improvement in the quality of the cream, it is advisable that the generally recognized desirability of cleanli-

TABLE I

Per cent butter-fat	Temp. range	1st day	2nd day	3rd day	4th day	5th day
38.6	32° to 41° F.	6,100,000	15,300,000	18,800,000	25,300,000	16,200,000
40.6	32° to 41° F.	5,800,000	12,700,000	18,500,000	18,200,000	10,800,000
Shipped from Pennsylvania.						
40.8	32° to 41° F.	740,000	1,100,000	1,600,000	2,100,000	1,900,000
40.4	32° to 41° F.	940,000	900,000	1,700,000	2,200,000	2,100,000
41.0	32° to 41° F.	940,000	670,000	2,500,000	3,500,000	2,100,000
Shipped from Wisconsin.						
37.8	40° to 45° F.	11,300	37,000	27,000	33,000	47,000
38.0	40° to 45° F.	25,000	55,000	33,000	Sold	Sold
38.4	40° to 45° F.	24,000	24,000	25,000	Sold	Sold
Shipped from Pennsylvania.						
35.0	32° to 38° F.	27,000	30,000	40,000	56,300	.....
35.0	32° to 38° F.	27,000	26,000	40,000	55,000	.....
35.0	32° to 38° F.	43,000	40,000	60,000	83,000	.....
Shipped from Pennsylvania.						

ness and sanitation be required of cream production in parallel to those of the regular milk supply. Particularly is such a step desirable at this time in view of the reported scramble of midwest creameries which have been excluded from Chicago to sell their products in eastern markets, thus underselling the local producers and unfairly competing on a sanitary basis prejudicial to the latter. More important than the commercial basis, however, is the public health aspect whereby the same sanitary considerations should be applied to cream which have been amply demonstrated to be necessary in the case of milk.

Recently evidence has been presented which strongly indicates the desirability of reforming some of our previous concepts regarding a reasonable bacteria standard for cream. Shrader[4] has shown that it is reasonable to adopt the same bacteria standard for cream as for milk. Formerly Lamson[5] and likewise Leete[6] expressed the desirability of establishing a common bacteriological standard for marketing the whole milk and cream. All of these workers have experimentally shown that it is possible under commercial conditions to prepare cream which conforms to such requirements when the separation is effected at the creamery by centrifugation, but certain of even the progressive elements in the trade have expressed grave doubts as to the possibility of actually marketing such cream under practical conditions. They have argued that the bacteria count of cream increases at a much faster rate than it does in milk. They also claim that this fact would make it impossible to deliver to the eastern market any cream which is produced and pasteurized in the middle west, regardless of the low count of such cream when it starts on its eastern journey of several days' duration. In Table I are tabulated bacteria counts (by the standard agar plate method) of pasteurized cream held in storage for several days.

In Table II are tabulated the bacteria counts of cream and the milk from which each lot of cream was respectively separated, for equal and successive time periods. The samples were taken from counts of regular shipments of milk and 42 per cent cream which were held, during the experiment, in a warm room whose temperature was maintained within a range of from 82° to 87° F.

The temperature of the milk and cream at the beginning of the experiment was about 58° F. and rose to about 79° F. at the conclusion.

SHIPPING PRECAUTIONS

It is thus apparent from the data in tables presented that in order to ship cream from the midwest to eastern markets it is necessary that the bacteria count must be relatively low in the cream to start with so as to arrive in the east with an acceptable count. It is also evident that the bacteria rate of increase in cream does not differ greatly from that of milk.

TABLE II

Product	0 hr.	1 hr.	3 hrs.	4 hrs.	5 hrs.
Milk	1,000,000	1,600,000	3,500,000	4,500,000	8,000,000
Cream	1,500,000	2,500,000	8,000,000	15,000,000	11,000,000
Milk	2,000,000	2,000,000	5,800,000	11,000,000	12,500,000
Cream	3,800,000	3,800,000	10,000,000	15,000,000	16,500,000
Milk	4,000,000	3,800,000	12,000,000	12,500,000	15,000,000
Cream	5,700,000	6,700,000	12,500,000	14,500,000	13,000,000

From the above discussion the following considerations are outstanding:

1. The tone of the creamery industry must be raised.
2. Regulatory control of cream has been indifferent or non-existent.
3. The quality of cream must be improved.
4. Enforcement of sanitary regulations has placed that part of the New York City cream shed which is immediately contiguous to New York City (such as New York state and nearer points of Pennsylvania) in a condition of outstanding merit in sharp contrast to the rest of their cream shed which has not been vigorously controlled, and to the other cream sheds which likewise have been indifferently controlled.
5. Cream can be produced and handled with the same bacteria limitations as those of milk.

It is thus apparent that the cumulative factors of public health requirement, need of the industry, available knowledge, and the economic situation, make it desirable that the public health officials inaugurate carefully considered regulations to control the quality of cream similar to what is now the case with milk. We are in the position to insist that every creamery which ships cream to our respective cities must comply in every respect with all the requirements of our regular milk plants located in our cities, and that the conditions of pasteurization and general cleanliness be similarly required and just as effectively enforced. Furthermore, we should require that the bacteria count of cream wheresoever it may be produced must be of the same order of magnitude as that of milk whether it be raw, prepasteurized or pasteurized.

There is a tendency in some quarters to permit a lower quality of cream to be used for ice cream than is allowed for bottling. It has been thought that the ice cream industry is not yet ready to adjust itself to the requirement of equal sanitation for its cream to that required of the milk industry as such and furthermore, it has been stated that there is not enough cream of sanitary quality equal to that of milk to supply the demand. However, ice cream dealers of Baltimore have stated that no cream is too good to go into ice cream, and they have requested the health department to require the same sanitary quality for all cream whether it be for bottling or ice cream, this ruling to go into effect January 1, 1927.

It has been clearly shown that these requirements are reasonable and practicable and anything less should not be tolerated. If the plea is made that such requirements would preclude the possibility of obtaining enough milk or cream for the local needs, attention is called to the fact that the industry will quickly adapt itself to the new regulations, particularly when they find it to their advantage by operating in a market protected from unscrupulous competition from the backward areas. In fact, unless the eastern seaboard uniformly takes action to the above end, it is clear that some sections will constitute a dumping ground for the off qualities of cream which are refused by the more progressive municipalities. The overhauling of New York's enforcement procedure and the requirements of Baltimore and Washington, together with the recent tightening up of Chicago's requirements, operate to either make the cream industry improve its practices or lose much of their eastern markets, and it will place indifferent municipalities in the rather unenviable position of consuming that which other places refuse.

There is a rising and insistent demand that sanitary requirements be effected for

ice cream control. There is no question but what such are needed but it is certainly unseemly, to say the least, to purport to control the final product when the quality of the raw material is ignored. Effective control of cream quality must be the foundation from which satisfactory ice cream control may be instituted. We follow the procedure and apply the lessons which the sanitary control of our milk supply has taught us to be necessary.

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THE WIDAL TEST AS CARRIED OUT IN PUBLIC HEALTH LABORATORIES

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SINCE THE INTRODUCTION by Widal in 1896 of the agglutination test for the diagnosis of typhoid fever, numerous modifications have been made, mostly to suit the convenience of the individual worker. It is quite safe to say that to-day probably no two laboratories perform the Widal test in exactly the same manner, unless very special precautions have been taken to exactly duplicate the various procedures in the test. In order to determine how the test was carried out in various public health laboratories, a questionnaire was sent to which 53 replies were received—28 state and 25 municipal laboratories.

THE SPECIMEN

Widal originally used clear blood serum for the agglutination test. Later Wyatt Johnson of Montreal showed that dried whole blood could be used in place of clear serum. The advantages of dried blood are several: It is quickly and easily obtained; it is readily transported; and it does not deteriorate or become contaminated by bacterial growth. The disadvantages are the presence of hemoglobin in the test and the impossibility of making accurate dilutions.

Two state laboratories and 5 city laboratories insist upon the submission of sufficient blood so that clear serum can be obtained. In nearly all of the rest, dried blood is used, although in many instances two kinds of containers are distributed, a tube and a piece of paper or foil. Eleven laboratories of the 52 distribute outfits for dried blood alone.

An examination of the containers used in different places shows these consist of ordinary paper or cardboard, parchment paper, lead foil, aluminum in various designs, glass slides, Wright tubes and test tubes. The city of Hartford, Conn., uses an ingenious device made up of a capillary tube in which is inserted a plunger for drawing up the drop of blood. The outfit is very complete with tourniquet for finger and needle for the incision.

THE ANTIGEN

Broth cultures were used for the production of antigen by 30 laboratories, agar slant cultures by 5, while both broth and agar were reported by 11. One state laboratory reported the use of peptone water for the production of antigen, while one city laboratory used the Dreyer technic of agglutination with preserved antigen.

The period of incubation of the typhoid cultures varied considerably. Agar slants were grown for 18 to 24 hours at 37° C.

Broth cultures were incubated at the same temperature for a similar period in about half the instances. Room temperature for 18 to 24 hours, body temperature for 2 to 6 hours and body temperature for 2 hours followed by icebox temperature for 18 hours were some of the other methods.

The reaction of the culture medium was adjusted by hydrogen ion titration in the majority of laboratories. The readings varied, however, from pH 6.2 to pH 8.0. Fifteen laboratories reported reactions of pH 7.0 to 7.4; 10 laboratories used a more acid medium while 5 used a more alkaline one. Other reactions reported were "neutral," "slightly acid," or "faintly alkaline," but the indicator was not mentioned. In 5 cases the Fuller scale of +0.5 to 1.0 was used.

The number of organisms per cubic centimeter in the broth cultures varied according to the period of incubation. The turbidity of antigens made from slant agar cultures was measured usually "by eye," though in 3 cases standard turbidity tubes were used.

The salt solution used to wash off the slant agar growths was made up fresh from every day to once in a week in most cases. One report read "several weeks" and one read "two months."

The strain of organism used was isolated from clinical cases of typhoid in 8 instances. Fifteen laboratories used the Rawlings strain, 6 the Hopkins, 3 Mt. Sinai and 1 Dorset. The remainder had received their cultures from the Hygienic Laboratory at Washington, from the New York City or State Health Departments or elsewhere but had made no record of the original source of the specimen.

THE TEST

The macroscopic agglutination test was favored as the most reliable by many of the laboratories but usually it was impossible to secure sufficient serum to run such a test. One state laboratory and 2 city laboratories reported the macroscopic test as standard, many laboratories reported the microscopic as the only test performed while several did both tests.

The 19 laboratories making the macroscopic test used total volumes of 0.5 c.c. to 2.0 c.c., dilutions in two, three and four or more amounts, the smallest being 1:10 and the largest 1:1280, and incubation periods in a variety of combinations. One to 4 hours at 37° C. was the most popular, but 5 workers preferred 56° C. for 2 hours. At either temperature sometimes the results were read immediately and sometimes placed in the icebox overnight. In 2 cases long incubation periods —12 hours and 24 hours—were carried out at 37° C.

TABLE I

THE PRODUCTION OF ANTIGEN FOR THE WIDAL TEST IN VARIOUS PUBLIC HEALTH LABORATORIES, SHOWING CULTURE MEDIUM USED, ITS REACTION, THE INCUBATION PERIOD OF THE CULTURE AND TEMPERATURE

Medium	Reaction	Incubation Period Hours	Temperature Centigrade
Broth	pH 7.2–7.8	12–24	Room
Broth	Faintly alkaline	18–24	37°
Broth	Neutral	18–24	37°
Broth	pH 7.1	12	37°
Broth	+0.5 to 1.0	18–24	37°
Broth	+1.0	24	37°
Broth	pH 6.6	24	37°
Broth	pH 7.0	24	37°
Broth	pH 7.3	24	37°
Broth	pH 7.7	18–24	20°
Broth	pH 6.8	18	20°–37°
Broth	pH 7.2	18–24	37°
Broth	pH 6.8–8.0	24	30°–35°
Broth	pH 6.8–7.0	2–4	37°
Agar	pH 6.8	24	37°
Broth or agar	pH 7.8	24	37°
Broth or agar	pH 7.6	18	37°
Broth or agar	+0.5	15	37°
Broth	pH 7.0	5	37°
Broth or agar	pH 7.0	18	37°
Broth	pH 6.6	24	37°
Broth	pH 7.2	24	37°
Broth	pH 7.0–7.2	18	25°
Broth or agar	pH 6.8–7.2	24–48	38°
Agar	pH 7.4	18	37°
Agar	pH 7.0–7.2	18	37°
Broth	pH 7.4	24	Room
Broth	+0.5–1.0	24	37°
Broth	pH 7.0	12	37°
Broth	pH 6.4	16	37°
Broth	pH 6.8	2–6	37°
Broth	pH 7.5	18	30°–37°
Broth	pH 6.9–7.2	14–16	20°
Broth	pH 6.4	18	37°
Broth	Slightly acid	12	37°
Broth	+1.0	18	37°
Peptone water	—	..	Room or 37°
Broth or agar	pH 7.0	24	37°
Agar	pH 6.2	16	37°
Broth	pH 7.1	14	37°
Broth	—0.5–1.0	12–18	37°

The 45 laboratories reporting on the microscopic test used dried blood mostly, but a few used serum making definite dilutions with a pipette. The dried blood was moistened with water or salt solution and

the dilution estimated by the color. This was set up in one, two or three dilutions with the antigen. When a single dilution was made it was usually 1:30, 1:50 or 1:60. When several were made they ran down as low as 1:10 or 1:6. The highest dilution reported was 1:300. The incubation period varied from 30 minutes to 2 hours, room temperature being used by 12 laboratories and body temperature by the remainder.

TABLE II

THE WIDAL TEST AS PERFORMED IN VARIOUS PUBLIC HEALTH LABORATORIES

Microscopic Method

Dilution of Serum	Hours Incubation Period	Temperature, Centigrade
1:10–1:50	1	Room
1:6–1:48	2	37°
1:50	5/6	37°
1:20–1:300	1	Room
1:30–1:60	½	37°
1:80	½	37°
1:50	1	Room
1:20–1:80	1	37°
1:40	¼	37°
1:50–1:100	2	"
1:40	1	37°
1:100	1	Room
1:80	½	37°
1:40	½	37°
1:20–80	1	37°
1:20–160	1	37°
1:20–80	1	Room
1:40–80	1	37°
1:30–60	1	Room
1:40	½–1	37°
1:40	1–2	37°
1:40	1	37°
1:40	1	37°
1:50	1	20°
1:40	1	37°
1:50	½	37°
1:60	1	37°
1:40	1	37°

Macroscopic Method

Dilution of Serum	Hours Incubation Period	Temperature, Centigrade
1:20–1280	2	56°
1:20–1:40	2	56° over night in icebox
1:50–400	2	56°
1:100–800	2	56°
1:20–640	1	37°
1:20–320	2	Room
1:40	2	37°
1:20–640	24	37°
400	3	37°
1:40–320	2	37°
1:40–160	2	37°
1:100–200	4	37° over night in icebox
1:100–500	2	37° over night at room temp.
To 1280	2	56°

READINGS

The interpretation of the readings on the macroscopic tests seemed to give little trouble to any of the workers. Considerable emphasis was placed upon the reading of the microscopic tests however. Twenty-nine workers considered that "a positive reaction has complete clumping and complete or almost complete loss of motility," while "a partial reaction shows varying degrees of agglutination and motility." As there was considerable discrepancy in the dilution, the period of incubation and the temperature of tests performed in different laboratories, the results could not be in exact accord, even though the readings were made in a similar manner. In several instances two or three dilutions of serum were used on the microscopical test. Eight replies stated that reactions were considered positive only when agglutination was complete in 1:40 dilution, and partial when clumping was noticed in any dilution. Several workers put the dilution higher however, reporting that a positive reaction could not be considered in dilutions respectively of less than 1:50, 1:60, 1:80, 1:100 and 1:180. In a few instances the dilution at which definite agglutination occurred was reported; in all other instances reports were made as "positive," "negative," or "partial," and "doubtful."

SUMMARY

The various factors entering into the reaction of agglutination have been the subject of much research, and some of these factors are quite well understood. A discussion of them will not be attempted here. Suffice it to say that the reaction of the culture medium upon which an organism is grown, the density of the suspension, the dilution of the serum, the time and temperature of incubation all influence directly the result of agglutination. The 53 laboratories represented in this study are among the larger institutions in the country with a large personnel and specialization of activities. Most of them perform Widal tests every day. If there is such a great variation in the technic of the test in these organizations one can well imagine the discrepancies creeping into the work as performed in the smaller laboratory, where Widal tests are run only occasionally by an overworked technician trying to do a multitude of other duties at the same time.

It is realized that agglutination of the typhoid bacillus is not a delicate reaction and will allow numerous variations without wide differences in qualitative results. That differences must occur is very evident however from what has been shown above and from personal observations. Standardization of the Widal test by the proper organization is very much needed for public health protection.

COMMUNICABLE DISEASE PRACTICE*

THE COMMITTEE on Communicable Diseases of the Conference of State and Provincial Health Authorities of North America realizes that a large field might be covered in this subject and yet little material be presented. For that reason the Committee decided to take up certain biologicals. A questionnaire was sent to the various State and Provincial Health Officers to ascertain the current opinion and practice on certain communicable diseases.

We left out vaccination against smallpox because in the earlier days of this conference, practically before any of you were members, there was a gentleman's agreement not to take up the question of smallpox for discussion on the basis that the discussion would never end. Furthermore, the efficiency of vaccination against smallpox cannot be questioned and the methods of vaccination have been carefully worked out and information on this is universally obtainable.

Certain biologicals are universally accepted as specific for certain diseases and therefore admit of universal use and recommendations, while others are selective and still partially in the experimental stage, and certain others occupy debatable grounds and are conceded but little merit.

SCARLET FEVER BIOLOGICALS

The first four questions relate to scarlet fever biologicals.

Question 1—Do you recommend the use of scarlet fever antitoxin in all cases of scarlet fever?

Answer—Yes, 24; No, 12; Under advisement, 2. Those answering in the affirmative further qualified as follows: In toxic or severe cases, 10; in both mild and severe cases, 1.

Question 2—Do you recommend scarlet fever antitoxin for passive prophylaxis? If so, name the indications.

Answer—Yes, 14; No, 16; non-committal, 8. Among those answering "yes," 4 were for limited use; 2 recommended it but were doubtful of results; and one further qualified by mentioning the positive Dick test.

Question 3—Do you recommend scarlet fever toxin for active prophylaxis? If so, under what circumstances do you consider it advisable?

Answer—Yes, 15; No, 16; non-committal, 7. Among the affirmative answers were the following qualifications: routine in school and preschool, 1; in institutions, picked schools, nurses, etc., 3; to children under 12 years old, 1; where Dick test positive, 1; to institutions, etc., in doses of 500, 5,000, 30,000, 1; routine where endemic and epidemic, 1; Yes, but not during epidemics, 1; Yes, but too early for general use, 1.

Question 4—Do you advocate the Dick test for diagnostic purposes?

Answer—Yes, 24; No, 12; non-committal, 2. Among the affirmatives 5 indicated under some circumstances and 2 stated under certain circumstances but explained its inaccuracies.

The majority of the states endorse scarlet fever antitoxin for treatment and it apparently can be looked forward to as a standard recommendation. The Dick test for diagnosis also seems to be advocated by the majority although the particulars and circumstances were not called

* Report of the Committee on Communicable Diseases read by C. A. Harper, M.D., State Health Officer, Madison, Wis., chairman, at the meeting of the Conference of State and Provincial Health Authorities of North America at the American Health Congress at Atlantic City, N. J., May 22, 1926.

for in the questionnaire. The reports upon the prophylactic scarlet fever biologicals denote conservatism in general, as the majority were on the negative or non-committal side. Those replying positively advocated selected cases or groups. Doubtless those replying negatively are awaiting detailed reports or practical experiences and the next year or two is likely to give us more definite information. It is interesting to know the reaction of the various State Boards of Health upon so new a biological which promises relief from a prevalent disease. The reports indicate that the various health officers are alive to developments. We may add that we are greatly indebted to those scientists who have made possible a better control of a disease noted for its disabling complications. Those of us who reside in the north are particularly interested as we bear the burden of its prevalence.

DIPHTHERIA

Question 5—Do you recommend diphtheria toxin-antitoxin as a routine to preschool and school children without a prior Schick?

Answer—Yes, 35; No, 3. Among those answering "yes," 4 specified in preschool only; 1 specified up to 10 years; 1 specified up to 12 years; 1 after consulting family physician.

In practical application toxin antitoxin now seems to be advised in the early years of life without a prior Schick in nearly all states of the Union. It can be looked upon as a standard practice.

Question 6—Do you advise the Schick test after toxin-antitoxin, when given to children routinely as part of the program?

Answer—Yes, 29; No, 7; no answer, 2. Among those answering "yes," were the following qualifications: Should be tested every year, 1; in six months, 4; not emphasizing but good practice, 2; when health officer has time, 2; only to random samples to test general immunity, 1.

Evidently it is the common practice now to recommend the Schick test after toxin-antitoxin. How fully it is followed out in actual practice is not evidenced by the questionnaire.

PERTUSSIS VACCINE

Question 7—Do you advocate pertussis vaccine in cases of exposure?

Answer—Yes, 8; No, 18; non-committal, 11. The qualifications among those replying "yes" were: in heavy doses, 2; when advice is requested, 1.

The doubt cast upon pertussis vaccine by some physicians has been sufficient to discredit it in the minds of many. Its benefits have been proclaimed by others. The answers to this questionnaire again show that conservatism prevails and the negative side is in the majority. With two exceptions no mention was made to the freshly prepared vaccine of high potency of late recommended. When the question was framed the intention was to elicit some opinion upon this recent modification of pertussis vaccine, but it is apparently not yet in wide use and opinions upon it are not forthcoming.

TYPHOID FEVER

Question 8—Was there an increased prevalence in typhoid fever in your state in 1925? To what do you attribute the increase?

Answer—Yes, 21; No, 16; no answer, 1. The qualifications to those answering "yes" were as follows: To tourists and campers, 4; small specific outbreaks, 3; drought, 4; smaller number of immunes since World war, 1; oyster outbreak, 1; general unsanitary conditions, 1; lack of follow-up work, 1.

The reports of the U. S. Public Health Service during 1925 indicated a considerable increase in the number of cases of typhoid fever over the year 1924. No common cause of this increase applicable over a number of states is evidenced by the opinions given in this report. The increase in tourist traffic mentioned in some of the reports is recommendation for providing sanitary camp grounds and safe water supplies for tourists and campers. In an age of tourist travel we are called upon to meet the conditions imposed by this sort of travel. A principal point to learn in connection with typhoid is that it is not a dead and departed affliction, but one whose causative

organism is ever present in the population awaiting the chance to renew its former prevalence when lack of sanitation allows it to prevail.

RABIES TREATMENT

Question 10—What form of rabies treatment do you recommend for preventive treatment in a person bitten by a rabid animal?

Answer—Pasteur treatment, 4; Pasteur treatment with modifications, 1; Semple, 1; Cumming, 3; Mulford, 2; New York City, 2; Squibb & Company, 1; Harris, 3; Fourteen Day Own Laboratory, 1; 21 treatments, 3; 14-day treatment, 1; not finished, 1; anyone licensed by the U. S. Public Health Service, 7; not answered, 7.

Judging from the questionnaire we take it for granted that any preparation licensed by the U. S. Public Health Service has sufficient merit to be administered. If there are valid preferences to any preparation we trust that future experience will demonstrate the merit in it.

Question 11—Do you advocate antirabic vaccine for animals in the control of rabies? If so, do you modify the usual method of control?

Answer—Yes, 28; No, 8; not answered, 1.

To the second part of the question upon modification of the usual methods of control the answers were *Yes*, 8; *No*, 14; and others not specified. Apparently, the use of rabies vaccine in dogs has become standard treatment. Particulars upon its use in conjunction with the older methods do not appear to be well worked out yet. There have been some reports that the strain of virus in all outbreaks is not identical and that some dogs given this vaccine have developed rabies. Favorable reports first rested upon the Japanese experiences. More extensive reports in this country on results following the practical use are awaited. We trust that in those states in which it is used alone, it will be found efficient and we believe it is worthy of trial for those disposed to try it. The double protection of vaccine and old methods of muzzling and tying by a leash should give ample protection to the public.

You will pardon our calling attention once more to the divergencies of answers brought forth by this questionnaire. On the toxin-antitoxin and Schick test requirements we seem to have approached nearer to a common practice during the past year.

Our differences on the other questions involved are presumably due in large measure to the recent innovation of these biological agents and more certain information upon indications and results will doubtless bring us nearer together as time goes by.

Two New Bulletins on Sight Conservation—The National Committee for the Prevention of Blindness, Inc., has added two more bulletins to its valuable contributions on sight conservation.

"Methods of Teaching Sight Saving Classes" has been prepared by Estella Lawes, director of the sight saving classes in the Cincinnati public schools. The pamphlet considers two classes of children, those with progressive eye defects and those with permanently low vision. The physical requirements of the sight saving classroom are described and the organization of the progrem and its application are explained in such detail as to serve as an outline for the beginning teacher in this work.

Bulletin No. 8, The Massachusetts Special, is the latest one to be added to the series of the Sight Saving Class Exchange. The material in this bulletin has been contributed by the sight saving class teachers of Massachusetts and by the children's worker of the Massachusetts Department of Education, Division of the Blind and Sight Saving.

THE FIFTY-FIFTH ANNUAL MEETING
OCTOBER 11–14, 1926, BUFFALO, NEW YORK

THIS year's meeting promises to be the largest in the history of the Association, both in number of sessions and in attendance. It promises also to be the best so far of the Association's constantly improving annual gatherings. If these promises are fulfilled, as is confidently expected, it will be in part because of the participation of the New York State Health Officers and Public Health Nurses, whose regular annual conference has been called by Dr. Matthias H. Nicoll in conjunction with the A.P.H.A. meeting, and because of the attractive variety of the sessions and papers offered.

A traditional feature of A.P.H.A. Annual Meetings are the special trips arranged to places of general or scientific interest in or near the convention city. Niagara Falls with its many industries will offer unusual attractions for these trips. Arrangements are being made for admitting delegates to some of the industrial plants at Niagara Falls not ordinarily open to the public. The various trips in Buffalo and Niagara Falls are summarized below.

The preliminary program of the sessions which follows is arranged in four sections—General Sessions; Special Sessions which have been developed around subjects of timely and lively interest; the programs of the Association's nine scientific Sections; and the special program arranged by the New York State Conference of Health Officers and Public Health Nurses for Tuesday morning and afternoon, October 12.

The Annual Meeting will begin on Monday morning, October 11, and end with a special dinner session on Thursday evening, October 14. All sessions will be held in the Hotel Statler, which is Association headquarters. There will be additions to and changes in this preliminary program. Delegates should consult the final program at the meeting for the time and place of all sessions.

BUFFALO AND VICINITY

There are many places in and near Buffalo that delegates will wish to visit. Where large numbers are interested, set trips arranged for a definite time will be scheduled and it is important that those wishing to take these trips register for them promptly upon their arrival at the meeting. Where fewer people may be interested, arrangements will be made to receive visitors who may go at their own convenience. Among the places to be visited are the following:

Buffalo City Hospital. Besides being one of the finest hospitals in the East, this institution will have four features of special interest:

a. The Ernest Wende Wing which represents the last word in hospital care of communicable diseases.

b. The Crippled Children's School which is just being completed and represents a phase of the very recent work for crippled children.

c. The Record Room. Here in a family file may be found all of the hospital movements of the various members of the family under consideration in every hospital, dispensary, or clinic in the city of Buffalo. The Record Room is especially interesting, and visitors are often surprised at the number of registrations which occur for the members of one family.

d. A popular health exhibit is being arranged by the Superintendent of the Hospital. This will include sections on all phases of preventive medicine and will be suggestive to others of the type of exhibit which can be prepared.

The Gratwick Laboratory. This State institution, housed in a building of its own, concerns itself with the diagnostic care and cure

of malignant diseases, and is one of a very small group of institutions of its kind.

Filtration Plant and Pumping Station. These modern plants, both of them belonging to the municipality, are located near together and a trip for engineers especially will be arranged.

American Radiator Company, and American Institute of Thermo Research. Here the sanitary engineers will be especially interested in the development of the very modern plant with much to give to health protection. The Institute heads the scientific study of heating methods and the continuous research.

Larkin Company. The Larkin Plant interests a large variety of people. Wives of delegates will probably be interested in the many household articles which they manufacture. For the scientific members of the group much may be seen in the way of very efficient modern industry, care of employes, and protection from health hazards.

Perrysburg. This institution for heliotherapy is described in the JOURNAL.

Roycrofters. The shops and the Inn at East Aurora will be interesting to those who admired Elbert Hubbard. This is a convenient trip from Buffalo.

The Health Department of Buffalo will, of course, be open at all times to delegates to the meeting.

AT NIAGARA FALLS

The usual half-day trip for all delegates will this year be to Niagara Falls. It will start shortly after lunch on Tuesday. At Niagara Falls there will be specially conducted trips through the plant of the Niagara Falls Power Company, the Shredded Wheat Biscuit Company, and other interesting places during the afternoon. The Niagara Falls Health Department will keep open house and delegates will be given every facility to examine their methods and equipment. This Health Department is especially proud of its laboratory and its prenatal clinics. The city filtration plant will similarly be open to the inspection of the engineers.

One of the chief beauties of Niagara Falls is the evening illumination. Large searchlights with changing colors played upon the falling water make it a huge kaleidoscope. The return to Buffalo therefore will not be made at once. Following the various trips in the afternoon the Association will convene at the Niagara Hotel where it will be the guest at supper of the Shredded Wheat Biscuit Company. In the evening a special program of illumination of the Falls will be arranged for the Association.

A number of the leading manufacturing establishments maintain very efficient industrial hygiene personnel and equipment. Many of them will be opened to small parties either on Thursday afternoon or other days during the convention. Among these are the Carbide and Chemicals Corporation, the Carborundum Company, The International Paper Co., and the Kimberley-Clark and Cellucotton Products Co.

SPECIAL FEATURES

A special program on Mental Hygiene is being arranged by the National Committee for Mental Hygiene. This will be held on Monday afternoon. A similar program at the meeting last year attracted a large audience.

Among the new features of this year's meeting will be the informal motion picture program. On Monday, Wednesday and Thursday from 5 to 6 there will be a showing of health pictures. Three or four pictures will be shown each afternoon and these will include the latest releases.

The Annual Meeting of the A.P.H.A. is made the occasion for the meeting of many other interested groups. Plans are under way for a meeting of New York State School Medical Inspectors, and a meeting of the Directors of State Public Health Laboratories. Final announcement of these meetings and others will be made in the final program. For these functions as well as all others, delegates are urged to register promptly so that they may be assured of accommodations. The Secretary's office will be glad to assist any group in arranging a special meeting, luncheon, dinner or trip.

LUNCHEONS AND DINNERS

Several luncheon and dinner sessions are listed in the following program of the sessions. Others of equal interest to special groups are yet to be arranged. Delegates are urged to register promptly upon arrival, especially for all luncheon and dinner sessions and the various trips. Without such advance registration accommodations cannot be provided.

NEW YORK STATE HEALTH DEMONSTRATIONS

Arrangements have been made so that those in attendance at the Annual Meeting in Buffalo may take advantage of the opportunity to visit two of the New York State Health Demonstrations, which for the past few years have been receiving financial assistance from the Milbank Memorial Fund.

Of the three New York State Demonstrations, those carried on by Syracuse and Cattaraugus County are conveniently located within a short journey of Buffalo and the third is in New York City. The trip may be made to either Syracuse or Cattaraugus County in a single day, if necessary, allowing for a visit of from four to six hours in either place. Special arrangements have been made to permit those visiting the demonstrations to see as much of the actual work carried on as possible within the limited time available.

The health demonstrations aim to demonstrate that large communities, such as a county of over 70,000 and a city of over 180,000, may with a reasonable expenditure, supply for its entire population a well rounded public health service in all its aspects to an extent heretofore ordinarily possible only for limited groups. Both the demonstrations have now been in progress for more than three years and offer to the visitor at this time what has been said to be admirable examples of effective community organization for the promotion of public health. Register promptly for these trips.

CONFERENCE OF HEALTH OFFICERS AND PUBLIC HEALTH NURSES

TENTATIVE PROGRAM

The Annual New York State Conference of Health Officers and Public Health Nurses will be held in Buffalo on October 12. The program for the morning and afternoon sessions is as follows:

Tuesday Morning

Introductory Address. MATTHIAS NICOLL, JR., M.D., Commissioner of Health.

What New York State Is Doing for Cripples. LEWIS A. WILSON, Director Division of Vocational and Extension Education, State Department of Education.

The Progress of the Toxin-Antitoxin Campaign in New York State. EDWARD S. GODFREY, JR., M.D., Director Division of Communicable Diseases, State Department of Health.

Tuesday Afternoon

Address. GEORGE M. FISHER, M.D., President New York State Medical Society.

Progress of Infant and Maternity Hygiene Work in New York State. ELIZABETH M. GARDINER, M.D., Director Division of Maternity, Infancy and Child Hygiene, State Department of Health.

Control of Nuisances by Local Health Officers. CHARLES A. HOLMQUIST, Director Division of Sanitation, State Department of Health.

These sessions will form a part of the annual meeting of the American Public Health Association, October 11–14, to which delegates to the New York conference are invited. Hotel headquarters for the Association will be at Hotel Statler and for the annual conference at Hotel Lafayette, located nearby.

PRELIMINARY PROGRAM OF THE SESSIONS

GENERAL SESSIONS

First Session—Monday Evening

Opening Prayer. RIGHT REVEREND WILLIAM TURNER, Bishop of Buffalo.

Addresses of Welcome. ALFRED E. SMITH, Governor of New York. FRANK X. SCHWAB, Mayor of Buffalo. C. SUMNER JONES, M.D., Dean of the Medical Department, University of Buffalo. FRANCIS E. FRONCZAK, M.D., Health Commissioner of Buffalo and Chairman of Local Committee.

Association Business.

Address. C.-E. A. WINSLOW, DR.P.H., President American Public Health Association.

Closing Prayer. RIGHT REVEREND CHARLES H. BRENT, Bishop of Western New York.

Reception and Dancing.

Second Session—Wednesday Evening

The Relation of Industrial Hygiene to Public Health. CHARLES T. GRAHAM-ROGERS, M.D., Medical Inspector of Factories, Bureau of Industrial Hygiene, State Department of Labor, New York City.

Lengthening of Human Life in Retrospect and Prospect. IRVING FISHER, PH.D., Yale University, New Haven, Conn.

The Problem of Community Organization to Meet an Epidemic Situation. DR. HOLLIS GODFREY, President Engineering Economics Foundation, Boston, Mass.

Dancing.

HEALTH DEMONSTRATIONS IN THE UNITED STATES

*Special Dinner Session**—Thursday Evening

The Philosophy of Health Demonstrations. LIVINGSTON FARRAND, M.D., LL.D., President Cornell University, Ithaca, N. Y., *Presiding.*

The Organization of Health Demonstrations. WALTER H. BROWN, M.D., Director Child Health Demonstration, Marion County, Ore.

The Financial Aspects of Health. HOMER FOLKS, LL.D., Secretary New York State Charities Aid Association, New York City.

The Value of Health Demonstrations to Health Officers. LOUIS I. HARRIS, M.D., Commissioner of Health, New York City.

* Arranged by the following committee: *Chairman*, John A. Kingsbury, Robert E. Chaddock, Ph.D., John A. Ferrell, M.D., Homer Folks, LL.D., Lee K. Frankel, Ph.D., Matthias Nicoll, Jr., M.D., Barry C. Smith.

RURAL HEALTH WORK

*Special Session**—Wednesday Morning

The Health Hazards of Rural Mothers and Children. J. H. MASON KNOX, JR., M.D., School of Hygiene, Johns Hopkins University, Baltimore, Md.

Discussion. **Periodic Physical Examination (Adults and Children).** DONALD B. ARMSTRONG, M.D., Welfare Department, Metropolitan Life Insurance Company, New York City.

Rural Sanitation. H. E. MILLER, Director Bureau of Engineering and Inspection, State Health Department, Raleigh, N. C.

Community Program (Grow from Within or Without). JOHN L. MONTGOMERY, Director County Social Service Association, Red Bank, N. J.

Rural Medical and Hospital Service. W. S. RANKIN, M.D., Duke Endowment, Charlotte, N. C.

Discussion. M. M. SEYMOUR, M.D., Department of Public Health, Regina, Sask.

* Arranged in coöperation with the following committee: *Chairman*, Frances Sage Bradley, M.D., Mrs. Elsbeth H. Vaughan, R.N., and John A. Ferrell, M.D.

TEACHING HEALTH IN COLLEGES

Special Session—Wednesday Morning

Committee on Personnel and Training.

Teaching Health in Colleges. JOHN SUNDWALL, M.D., Director Department of Public Health, University of Michigan, Ann Arbor, Mich.

Discussion. **Can College Hygiene Be Made Effective in the Life of College Students?** THOMAS A. STOREY, M.D., PH.D., Professor of Hygiene and Director of the Department of Hygiene, College of the City of New York, New York City.

The Essential Training for Teachers of College Hygiene. FLORENCE MEREDITH, M.D., Director of Student Health, Smith College, Northampton, Mass.

The Content of the Course in College Hygiene. JESSE FEIRING WILLIAMS, M.D., Professor of Physical Education, Teachers College, Columbia University, New York City.

Laboratory Aspects of College Courses in Hygiene. PROFESSOR FRED M. GREGG, Department of Psychology and Health Education, Nebraska Wesleyan University, Neb.

MILK

Special Session—Wednesday Afternoon

Committee on Dairy Products.

Report of the Committee on Dairy Products. *Chairman,* PROFESSOR HENRY C. SHERMAN, Columbia University, New York City.

Definitions of Pasteurization and Their Enforcement. LESLIE C. FRANK, Associate Sanitary Engineer, U. S. Public Health Service, Mobile, Ala.

Chicago's Program for Correction of Pasteurization Defects. GEORGE W. PUTNAM, Sanitary Engineer, Department of Health, Chicago, Ill.

Some Observations on the Treatment of Milk by an Electrical Method. PROFESSOR SAMUEL C. PRESCOTT, Massachusetts Institute of Technology, Cambridge, Mass.

MILK

Special Session (Continued)—Thursday Morning

Report of the Committee on Nutritional Problems. *Chairman,* PROFESSOR HENRY C. SHERMAN, Columbia University, New York City.

Thermal Death Point. WILLIAM H. PARK, M.D., Director Health Department Laboratories, New York City.

The Effect of Different Temperatures for Pasteurization Upon the Entire Flora of Milk. M. J. PRUCHA, University of Illinois, Urbana, Ill.

Report of Committee on Milk Supply. *Chairman,* H. A. WHITTAKER, Director Division of Sanitation, State Board of Health, Minneapolis, Minn.

Classification and Grading of Milk. C. W. LARSON, Chief, Bureau of Dairying, United States Department of Agriculture, Washington, D. C.

VENTILATION

Public Health Engineering and Industrial Hygiene Sections.

Joint Session—Tuesday Morning

Inhalation and Retention and Exhalation of Dust, Fumes and Smoke. PHILIP DRINKER, School of Public Health, Harvard University, Boston, Mass.

Recent Developments at the Last Meeting of the American Society of Heating and Ventilating Engineers. LEONARD GREENBURG, PH.D., United States Public Health Service, New Haven, Conn.

Ventilation Standards. WILLIAM J. MCCONNELL, M.D., Pittsburg, Pa.

Rochester Coöperative Experiments on School Ventilation (Progress report).

TEACHING HEALTH

Health Education and Publicity and Child Hygiene Sections.

Joint Session—Thursday Afternoon

a. **Source Material in Health Education and the Criterion by Which It Is to be Judged.** SALLY LUCAS JEAN, Consultant in Health Education, New York City.

Discussion. BRISTOW ADAMS, M.D., Cornell University, Ithaca, N. Y.; MRS. JOHN COLLIER, Chicago, Ill.; and N. H. PEARL, Assistant Supervisor Health Education, Department of Health Education, Detroit, Mich.

b. **An Examination of Display Material for Classroom Use**—A Clinic.

MUNICIPAL HEALTH ADMINISTRATION

Public Health Administration Section and Committee on Administrative Practice.

Joint Session—Monday Afternoon

Report of the Committee on Communicable Diseases. *Chairman,* HAVEN EMERSON, M.D., Department of Public Health Administration, Columbia University, New York City.

How the Appraisal Form Served New York City. LOUIS I. HARRIS, M.D., Commissioner of Health, New York City.

How to Prepare a Budget for a City Health Department. A. W. FREEMAN, M.D., Johns Hopkins University, Baltimore, Md.

PUBLIC HEALTH ADMINISTRATION

First Session—Monday Morning

The Health Department and the Practising Physician. HENRY F. VAUGHAN, D.P.H., Commissioner of Health, Detroit, Mich.

Discussion. MATTHIAS NICOLL, JR., M.D., State Commissioner of Health, Albany, N. Y.

Heart Disease as a Public Health Problem. DON M. GRISWOLD, M.D., D.P.H., State University of Iowa, Iowa City, Ia.

Discussion. NELSON RUSSELL, M.D., City Hospital, Buffalo, N. Y.

Value and Use of Health Department Bulletins. HERMAN N. BUNDESEN, M.D., Commissioner of Health, Chicago, Ill.

Discussion. FRANK J. OSBORNE, Health Officer, East Orange, N. J.

Insufficiencies in Methods of Control of Certain Respiratory Diseases. DWIGHT M. LEWIS, M.D., Director Board of Communicable Diseases, Department of Health, New Haven, Conn.

Training Teachers to Teach Health. JULIUS LEVY, M.D., Director Child Hygiene Division, Health Department, Newark, N. J.

Second Session—Tuesday Morning

Business Session. Limited exclusively to Fellows of this Section to consider the reorganization of the Section.

Forum Session—Thursday Afternoon

AMONG the many questions submitted for discussion in this session the following have been selected for first discussion as seeming to be of interest to the greatest number. Following the discussion of these questions other questions may be submitted from the floor.

1. **Is it safe to omit dairy farm inspection from a program of milk control?**
2. **Does not our present knowledge of scarlet fever warrant a material shortening of the minimum period of quarantine?**
3. **Can the physical examination of food handlers be justified as a function of the health department?**
4. **Shall we abandon placarding of homes in which whooping cough and measles are isolated?**

LABORATORY

First Session—Tuesday Morning

Standardization. Address of the Chairman. L. M. WACHTER, Chemist, Division of Laboratories and Research, State Department of Health, Albany, N. Y.

The Relation of the Diseases of Animals to Public Health. V. A. MOORE, M.D., New York State Veterinary College, Cornell University, Ithaca, N. Y.

The Accuracy of Bacterial Counts from Milk. ROBERT S. BREED, PH.D., Chief of Research, Division of Bacteriology, New York State Agricultural Experiment Station, Geneva, N. Y.

Referees' Report of Progress on Standardization of the Wassermann Test. *RUTH GILBERT, M.D., and H. VIRGINIA LANGWORTHY, Bacteriologist, State Department of Health, Albany, N. Y.

Report of Referee on Standardization of Disinfectants. G. F. REDDISH, PH.D., U. S. Department of Agriculture, Washington, D. C.

The Influence of Gentian Violet on the Confirmatory Test for B. Coli in Water Analysis. M. S. NICHOLS, VERA VINCENT and W. D. STOVALL, M.D., Director State Laboratory of Hygiene, State Board of Health, Madison, Wis.

A Simplified Procedure in the Determination of B. Coli in Water. WILLIAM L. LITTERER, M.D., Director of Laboratories, State Health Department, Nashville, Tenn.

A Search for Pathogenic Bacteria in Swimming Pools. WILLIAM ROYAL STOKES, M.D., Director Bureau of Bacteriology, Health Department, Baltimore, Md.

Second Session—Wednesday Morning

Efficiency in the Methods for Routing, Examining, and Reporting of Specimens in a Large Public Health Laboratory Handling 80,000 Specimens Annually. FRIEND LEE MICKLE, Director Bureau of Laboratories, and STANLEY H. OSBORN, M.D., Commissioner of Health, State Department of Health, Hartford, Conn.

Differentiation Between Specimens Examined and Examination Procedure in Preparing Laboratory Reports. EDMUND K. KLINE, DR.P.H., Director of Laboratories, Jefferson County Board of Health, Birmingham, Ala.

Laboratory Examinations of Skin Diseases Caused by Molds. HENRY ALBERT, M.D., State Commissioner of Health, Des Moines, Ia.

A Quantitative Study of the Action of Light on Certain Bacteria. HAROLD W. LYALL, M.D., and BRIAN O'BRIEN, M.D., J. N. Adam Memorial Hospital, Perrysburg, N. Y.

The Preparation and Testing of Diphtheria Toxoid (Anatoxine—Ramon). P. J. MOLONEY, PH.D., Assistant Director Connaught Laboratories, University of Toronto, Toronto, Ont.

Etiology of Measles. N. S. FERRY, M.D., Parke, Davis & Company, Detroit, Mich.

Studies of the Etiology of Measles. A. W. WILLIAMS, M.D., MINNIE WILSON and WILLIAM H. PARK, M.D., Director Health Department Laboratories, New York City.

Third Session—Thursday Afternoon

The Distribution of Enteric Infections in Virginia. AUBREY H. STRAUS, Director of Laboratories, State Board of Health, Richmond, Va.

Report on Two Hundred and Fifty Thousand Kahn Tests. R. L. KAHN, PEARL L. KENDRICK and J. L. LANDAU, Department of Health, Lansing, Mich.

Electrophoretic Potential and the Virulence of Bacteria. I. S. FALK, PH.D., Department of Hygiene and Bacteriology, University of Chicago, Chicago, Ill.

Effect of Sulphites on Growth of Bacteria in Gelatin. H. W. SCHOENLEIN, Introduced by MAX LEVINE, Department of Bacteriology, Iowa State College, Ames, Ia.

Standard Method for Testing Efficiency of Milk Bottle Sterilization. NEVA RITTER, Bacteriologist, Kansas City Consumers' League, Kansas City, Mo.

Chlorination of Soda Fountain Glassware. WILLIAM B. SHARP, M.D., Health Officer, University of Chicago, Chicago, Ill.

The Chemical Sterilization of Dishes in Restaurants and Public Eating Places. W. A. HADFIELD, Chief Chemist, and J. W. YATES, Consultant in Sanitation, General Laboratories, Madison, Wis.

* Referee and sub-referee.

VITAL STATISTICS

First Session—Monday Morning

Development of Statistics of Marriage and Divorce in New York State. J. V. DEPORTE, Director Division of Vital Statistics, State Department of Health, Albany, N. Y.

The Present Health of Mexico. FREDERICK L. HOFFMAN, LL.D., Consulting Statistician, Prudential Life Insurance Company, Newark, N. J.

Report of Committee on Sex and Age Groupings. *Chairman,* W. THURBER FALES, PH.D., State Board of Health, Montgomery, Ala.

Report of Committee on International Vital Statistics. *Chairman,* EDGAR SYDENSTRICKER, Statistician in Charge, U. S. Public Health Service, Washington, D. C.

The Need for Improved Vital Statistics. ROBERT M. WOODBURY, PH.D., Institute of Economics, Washington, D. C.

One Dozen Years of Vital Statistics in North Carolina. F. M. REGISTER, M.D., Director Bureau of Vital Statistics, State Board of Health, Raleigh, N. C.

A Statistical Survey of Sanitary Conditions in Cuba. J. E. LOPEZ-SILVERO, M.D., National Department of Health, Havana, Cuba.

Second Session—Tuesday Morning

Some Aspects of Infant Mortality as Shown in Canadian Vital Statistics. E. S. MACPHAIL, Superintendent Bureau of Statistics, Ottawa, Ont.

Importance to the Child of Accurate Birth Registration. W. A. PLECKER, M.D., Registrar of Vital Statistics, State Board of Health, Richmond, Va.

Report of Committee to Consider the Proper Definition of "Stillbirth." *Chairman,* H. B. HEMENWAY, State Department of Health, Springfield, Ill.

Does Infant Welfare Work Operate to Preserve the Unfit? I. S. FALK, PH.D., Department of Hygiene and Bacteriology, University of Chicago, Chicago, Ill.

An Analysis of Infant Mortality by Causes. HOWARD WHIPPLE GREEN, Director Bureau of Statistics and Research, Cleveland Health Council, Cleveland, O.

Third Session—Wednesday Afternoon

The Need of Trained Statisticians in the Hospital Field. S. W. WYNNE, M.D., Director Bureau of Hospitals, Department of Health, New York City.

Report of Committee on Vital Statistics Training. *Chairman,* W. J. V. DEACON, M.D., Director Bureau of Records and Statistics, Department of Health, Lansing, Mich.

Report of Committee on Accuracy of Certified Causes of Death and Its Relation to Mortality Statistics. *Chairman,* HAVEN EMERSON, M.D., Department of Public Health Administration, Columbia University, New York City.

Report of Committee on Contributory Causes of Death. *Chairman,* GEORGE H. VAN BUREN, Metropolitan Life Insurance Company, New York City.

Reports of Committees to Aid Completion of Registration Area Before 1930, External Causes of Death, and Standard Million. *Chairman,* LOUIS I. DUBLIN, PH.D., Metropolitan Life Insurance Company, New York City.

Reports of Committees on Joint Causes of Death, Registration Affairs, and Forms and Methods of Statistical Practice. *Chairman,* WILLIAM H. DAVIS, M.D., Bureau of the Census, Washington, D. C.

Fourth Session—Thursday Morning

Death Rates Among Physicians. HAVEN EMERSON, M.D., Department of Public Health Administration, Columbia University, New York City.

Results of a Morbidity Study of a General Population Group. EDGAR SYDENSTRICKER, Statistician in Charge, U. S. Public Health Service, Washington, D. C.

Report of Committee on Public Health Climatology. *Chairman,* E. W. KOPF, Metropolitan Life Insurance Company, New York City.

The Forecasting of Communicable Diseases. A. W. HEDRICH, Director of Surveys, Department of Health, Chicago, Ill.

Constitutional, Statutory and Administrative Aspects of Vital Statistics Practice in the United States. JAMES A. TOBEY, Cambridge, Mass.; W. THURBER FALES, PH.D., Director Bureau of Vital Statistics, Montgomery, Ala., and E. W. KOPF, Metropolitan Life Insurance Company, New York

INDUSTRIAL HYGIENE

Luncheon Session—Tuesday Noon

Business Meeting. For Section Fellows, members and invited guests.

First Session—Wednesday Afternoon

The Carbon Monoxide Hazard in Industries. MAY RIOKIN MAYERS, M.D., New York City.

The Trained Medical Consultant in Industry and His Value to the State. ROBERT S. MCBIRNEY, M.D., Bureau of Industrial Hygiene, State Department of Labor, New York City.

Compensation and Industrial Hygiene. CHARLES T. GRAHAM-ROGERS, M.D., Medical Inspector of Factories, Bureau of Industrial Hygiene, State Department of Labor, New York City.

Pertinent Questions Facing the Field of Industrial Hygiene To-day. FRANK L. RECTOR, M.D., Editor Nation's Health, Chicago, Ill.

Second Session—Thursday Morning

The Effects of Silica Dust Upon the Lungs. R. R. SAYERS, M.D., Chief Surgeon U. S. Bureau of Mines, Washington, D. C.

Report of a Stereo-Roentgenological Examination of About One Thousand Grindstone and Cutstone Workers. DANIEL J. KINDEL and EMERY R. HAYHURST, State Department of Health, Columbus, O.

Report of a State-wide Investigation of Spray Coating Processes. HENRY FIELD SMYTH, M.D., University of Pennsylvania, Philadelphia, Pa.

Report of the Dusseldorf Exhibition on Industrial Hygiene. GEORGE M. PRICE, M.D., Joint Board of Sanitary Control, New York City.

The Importance of the Development of Industrial Morbidity Data from the Standpoint of the Physician. CLARENCE O. SAPPINGTON, M.D., San Francisco, Cal.

FOOD AND DRUGS

First Session—Monday Afternoon

Report of the Committee on Nutritional Problems. *Chairman,* PROFESSOR HENRY C. SHERMAN, Columbia University, New York City.

The Value of Oysters and Other Articles of Sea Food as Considered from the Standpoint of Nutrition. D. BREESE JONES, Bureau of Chemistry, Chemist in Charge, Protein Investigation Laboratory, Washington, D. C.

Report of the Committee on Meat, Fish and Shellfish. *Chairman,* W. H. LIPMAN, M.D., Swift & Company, Chicago, Ill.

The Influence of Food upon the Bacterial Flora of the Small Intestine. L. ARNOLD, Professor of Bacteriology, Loyola College, Chicago, Ill.

Second Session—Tuesday Morning

Cosmetics—Their Composition, and the Dangers Involved in Their Indiscriminate Use, as Experienced by the New York City Department of Health. S. DANA HUBBARD, M.D., Division of Illegal Practice of Medicine, Department of Health, New York City.

Report of the Committee on Medicinal Products. *Chairman,* F. C. BLANCK, PH.D., Bureau of Chemistry, Washington, D. C.

Report of the Committee on Fruits, Vegetables and Their Products. CARL R. FELLERS, Research Professor of Horticultural Manufactures, Massachusetts Agricultural College, Amherst, Mass.

Report of the Committee on Dairy Products and Eggs. *Chairman,* H. W. REDFIELD, PH.D., Mendham, N. J.

Occurrence of the Colon Group on Commercial Candies. PROFESSOR JOHN WEINZIRL, Department of Bacteriology and Pathology, University of Washington, Seattle, Wash.

Third Session—Wednesday Morning

The Place of the Banana in the Diet. WALTER H. EDDY, Professor of Physiological Chemistry, Columbia University, New York City.

The Present-Day Beverages from the Health Standpoint. J. W. SALE, Chemist in Charge, Water and Beverage Laboratory, Washington, D. C.

Report of the Committee on Beverages. *Chairman,* H. J. KNAPP, M.D., Chief Chemist, Health Department, Cleveland, O.

Public Health Aspects of Food Preservation. CARL R. FELLERS, Research Professor of Horticultural Manufactures, Massachusetts Agricultural College, Amherst, Mass.

PUBLIC HEALTH ENGINEERING

First Session—Monday Morning

International Activities in Public Health Engineering.

Introduction. VICTOR HEISER, M.D., Director for the Far East, International Health Board, New York City.

South America. E. H. MAGOON, Sanitary Engineer, International Health Board, New York City.

European Countries. GEORGE W. FULLER, Consulting Engineer, New York City.

Australia. F. F. LONGLEY, Lock Joint Pipe Company, Ampere, N. J.

Luncheon Session—Tuesday Noon

Business Meeting. Reports of committees. Election of officers.

Second Session—Wednesday Morning

Progress in Eliminating Pollution from the Great Lakes and the St. Lawrence Waterways.

Introduction. (a) ALLAN J. MCLAUGHLIN, M.D., Senior Surgeon, U. S. Public Health Service, St. Louis, Mo.

(b) JOHN A. AMYOT, M.D., Deputy Minister of Health, Department of Health, Ottawa, Ont.

Lake Superior. GEORGE H. FERGUSON, Sanitary Engineer, Department of Health, Ottawa, Ont.

Lake Erie and the Niagara River. J. W. ELLMS, Superintendent of Filtration, Cleveland, O.

Lake Michigan. LANGDON PEARSE, Sanitary Engineer, Chicago Sanitary District, Chicago, Ill.

Lake Ontario and the St. Lawrence River. FREDERICK A. DALLYN, Toronto, Ont.

Third Session—Thursday Afternoon

Needed Research in Sewage Disposal. W. RUDOLFS, Director New Jersey Experiment Station, New Brunswick, N. J.

Regional Planning in Relation to Public Health Engineering. THOMAS ADAMS, Director Regional Planning for New York and Environs, Russell Sage Foundation, New York City.

Mosquito Control Throughout the World and Its Importance as an Adjunct to Public Health Engineering. LELAND O. HOWARD, M.D., PH.D., Chief, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

PUBLIC HEALTH NURSING

First Session—Monday Morning

Nursing in Relation to the Three Plans Submitted for Municipal Health Department Practice.

Discussion.

W. F. WALKER, D.P.H., Field Director Committee on Administrative Practice, A.P.H.A., New York City.

C.-E. A. WINSLOW, DR.P.H., Professor of Public Health, Yale University, New Haven, Conn.

L. I. HARRIS, M.D., Commissioner of Health, New York City.

Dinner Session—Monday Evening

Business Meeting. For Section Fellows, Members and invited guests.

Second Session—Thursday Morning

Advisory Committees on Nursing in Relation to Public Health Nursing Projects in Official Agencies.

Discussion.

JULES L. BLUMENTHAL, M.D., D.P.H., Department of Health, New York City.

CORA M. TEMPLETON, Director of Nursing, Department of Public Health and Welfare, Cleveland, O.

CHILD HYGIENE

First Session—Monday Morning

Coördination and Correlation of Child Health Activities as Exemplified in the Toronto Program.

The Infant. ESTHER BEITH, formerly Nurse Director of Child Welfare, Toronto, Ont.

The School Child. JOHN T. PHAIR, M.B., D.P.H., Director Child Hygiene Division, Provincial Department of Health, Toronto, Ont.

The Handicapped Child. J. LOUDEN, Director of Training in Auxiliary Classes, Toronto, Ont.

The Role of the Hospital for Sick Children in Correlating the Agencies Interested in Child Health. ALAN BROWN, M.D., Professor of Pediatrics, University of Toronto, and Consultant in Child Hygiene, Board of Health, Toronto, Ont.

Second Session—Wednesday Afternoon

School Health Procedure Outlined and Criticized.

The Physician. WILLIAM A. HOWE, M.D., Director Medical Service, State Department of Education, Albany, N. Y.

Discussion. DON W. GUDAKUNST, M.D., Director of School Health Service, Board of Health, Detroit, Mich.

The Nurse. BEATRICE SHORT, Secretary for School Nursing, National Organization for Public Health Nursing, New York City.

Dinner Session—Wednesday Evening

Committee on Health Problems in Education.

Chairman, MERRILL E. CHAMPION, M.D., Director Division of Hygiene, State Department of Public Health, Boston, Mass.

HEALTH EDUCATION AND PUBLICITY

First Session—Monday Afternoon

A Clinic on Posters and Placards for Adults.

An attempt at a tentative selection from material available from national sources.

Chairman, RAYMOND S. PATTERSON, State Health Department, Trenton, N. J.

Clinicians, DR. D. B. LEARY, Professor of Psychology, University of Buffalo, Buffalo, N. Y.; URQUAHART WILCOX, Director Buffalo Academy of Fine Arts, Buffalo, N. Y.; CLARENCE L. SCAMMAN, M.D., Assistant State Commissioner of Health, Boston, Mass.

Dinner Session—Monday Evening

Business Meeting. For Section Fellows, Members and invited guests.

Second Session—Wednesday Afternoon

How Popular Must Popular Health Education Be?

A clinic on the soundness of printed matter, press releases, radio talks, etc.

Chairman, EVART G. ROUTZAHN, Associate Director Department of Surveys and Exhibits, Russell Sage Foundation, New York City.

Clinicians, EDWIN E. SLOSSON, Director Science Service, Washington, D.C.

Round Table Luncheons and Dinners. (Limited to 25 in attendance.)

1. **Meetings for the Education of the Public—Why? When? Where? How?** *Chairman,* EVART G. ROUTZAHN.
2. **Departmental Annual Reports—Preparation and Use of City and State Reports.** *Chairman,* IRA V. HISCOCK.
3. **Film Slides and Continuous Motion Pictures.** *Chairman,* RAY H. EVERETT.
4. **Health Education Section of "Appraisal Form"—Its Adequacy and Problems of Its Application.** *Chairman,* PHILIP S. PLATT.
5. **Official House Organs—Purposes of Bulletins of State and Local Health Departments—How Best Realized?** *Chairman,* B. R. RICKARDS.
6. **How to Evaluate Publicity and Educational Material.** *Chairman,* MARJORIE DELAVAN.
7. **Publicity for Rural Communities.** *Chairman,* H. E. KLEINSCHMIDT, M.D.
8. **Conference of Editors of Health Magazines.** *Chairman,* JAMES A. TOBEY.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

EDITORIAL COMMITTEE

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THE BUFFALO MEETING

THE ADVANCEMENT in public health progress is dependent on the ability, knowledge and industry of the local sanitarian, as well as the staff officers of the state and national public health organizations, both official and unofficial. The results secured through the efforts of such organizations cannot in the sum total amount to much more than the weak links in their ranks. It is especially important therefore that the rank and file of the public health profession avail themselves of annual meetings in order to exchange ideas and to receive information promoting the successful accomplishment of preventive work. Naturally there should be one good state association meeting at least once a year, which all workers should strive to attend. In addition to local meetings the Annual Meeting of the American Public Health Association should be attended by every man and woman engaged in state and local health work who can secure the means for such attendance.

In order to systematize attendance on public health gatherings at the least expense and waste of time and effort and to concentrate on the most important meetings, the North Carolina State Board of Health, at the request of its Acting Secretary, has enacted the following official regulation: "That the chief executive officer of the Board or his deputy, the director of the State Laboratory of Hygiene, the director of the Bureau of Vital Statistics and the director of the Bureau of Engineering or his deputy be required to attend the annual sessions of the American Public Health Association." This action of a health department noted for the excellence of its state and local health work might well be imitated by other state and local health departments and unofficial organizations in the interest of economy and efficiency. The acting secretary of the North Carolina Board of Health in commenting on this action states: "The Board feels that much good will result from attendance on these meetings and that the cost of such attendance in time and money will be many times repaid in more efficient and enthusiastic work."

The program of the Fifty-Fifth Annual Meeting is given in this issue of the JOURNAL. It is an exceptional program in the number and variety of its sessions. For all types of sanitarians there are four full days of instruction interspersed with entertainment. The practical education of a professional man or woman begins when he leaves school. The Buffalo Meeting is an excellent post-graduate opportunity.

ETHICS AND PATENTS

ONE OF THE glories of the medical profession has been that discoveries for the betterment of mankind and the relief of suffering have always been given freely to the public. Its code of ethics has been derived largely from the Oath of Hippocrates, which has been described as "the most memorable of human documents," and the best of the profession is still controlled by the principles enunciated in that oath. It is simply the Golden Rule of "Do unto others as you would that they should do to you," applied to the practice of medicine, which is regarded as a profession rather than a trade.

Patent and proprietary medicines have been and are a stench in the nostrils of the profession. They involve no discoveries, while the secrecy insured enables the manufacturers to reap unjustifiable profits—to say nothing worse.

One remembers the shock which was felt in this country when von Behring took out a patent on diphtheria antitoxin. Roux, who had developed this antitoxin by somewhat different methods coincidently with von Behring, took out no patent, but gave his method freely to the profession with the result that many people the world over still give him credit for the discovery, though he himself distinctly stated that it belonged to von Behring. As far as the writer is aware, von Behring's patent never held in this country and did not interfere with the production of antitoxin by any manufacturer.

Within the last few years several products have been patented, such as insulin, which was something entirely new and the existence of which even was unsuspected. Its production involved expensive methods and exact work, which it was believed the average manufacturer could not properly supply. A patent was taken out and made over to the University of Toronto, which institution controls it at the present time. However, new methods have been evolved and the patent now is practically a dead letter as far as controlling the production of insulin goes. Other chemical products have also been patented within the last few years, and there is apparently a growing laxity in regard to such matters, which is to be regretted. It must be noted that medical men have not been responsible in all cases.

The obtaining of a patent by the Dicks on the production of scarlet fever toxin and antitoxin has led to a great deal of criticism, for reasons which are obvious. No new bacteriological procedure was involved in their production. It is more than probable that the germ from which they originally made their products was isolated and described as early as 1885, though this can never be proved nor disproved. It is certain, however, that scarlet fever antitoxin was made in Vienna many years ago and used with success, and equally certain that vaccines prepared from streptococci were used for the prevention of scarlet fever with reported good results in Russia in a large number of cases. There does not appear to be anything strictly original in the method of growing the germ or the production of the serum, and one is indeed puzzled to understand how it was considered patentable. As a recent writer has stated: ". . . if, as seems probable, it (scarlet fever) is eventually definitely proved to be due to a streptococcus, then it may truly be said that the discovery is one which has been made by no single individual alone but by a mass of patient workers who have helped to establish the fabric of proof."

In the *Journal of the American Medical Association* for September 26, 1925, page 996, the Dicks defend their patent and give their reasons for obtaining it. These reasons do not seem to be substantial, since biological products sold in this country are under the control of the Public Health Service, which control has been found entirely adequate for other biological products of a similar character, and

which the Public Health Service believes to be sufficient for the scarlet fever products. In this letter, the authors make a point of the fact that their claims have been granted by the United States Government. It can only be said in reply to this that the same government granted a patent to Perkins' tractors, to Meyers' tapeworm trap, and a second one for the method of using this ingenious invention; for the Oxydonor, for flavored Epsom's salts, and many other equally absurd so-called discoveries. Let no one suppose that queer patents belong to the past. The flavored Epsom salts was granted a patent in 1917; in 1921 Savrite, one of the many so-called consumption cures which "never yet had a failure" was patented, and in 1923 San-I-Sal, an obesity cure composed almost entirely (97 per cent) of Epsom salts, baking soda and common salt, was recognized as worthy of protection by our government. To boast of a patent involving a knowledge of the biological sciences granted by the U. S. Patent Office indicates a deficient sense of humor. To quote the Patent Office as an authority on scientific subjects is on a par with quoting the first chapter of Genesis as a textbook of geology.

It is well known that scarlet fever toxin and antitoxin are being produced by methods different from those put forward by the Dicks, and from cultures obtained from different sources, with results which are apparently equal in every respect to those obtained from the material controlled by the Dicks and the Scarlet Fever Committee, of which they are members, to which their patent has been assigned and which controls the licensing of manufacturers of this product under their patent. There seems to be no reason for believing that preparations licensed by the Scarlet Fever Committee are or will be any better than those put out under the authority of the Public Health Service.

We do not need to question the sincerity of the Dicks, though we cannot but believe that they have made a mistake in patenting their methods. We believe that the medical profession generally does not approve of patents on such products, even where they involve new methods and new discoveries. The whole matter leaves a bad taste in one's mouth.

WHERE ARE WE GOING IN ORAL HYGIENE?

IT HAS BEEN two decades or more since we, as a nation, rediscovered our teeth. At about that time striking instances were brought to light in which localized or systemic infections of serious character were traced to abscesses or pyorrheal conditions in the mouth. The cumulative evidence of this character from several sources indicated a serious problem and the need for serious preventive measures.

With characteristic American energy we rushed off with hue and cry after a dental program. What kind of a dental program? That apparently was of minor importance; the main thing was that it should be a dental program. The confusion of thought and lack of a sense of relative values that has been behind this popular wave of enthusiasm has been evident in much that has been said and written in behalf of oral hygiene. There has been a marked tendency to lump together a variety of bad oral conditions such as unclean teeth, irregular grinding surfaces, malocclusion, caries of the dentine, pyorrhea and abscessed roots, as all of equal importance. From some of the literature on the subject one might judge that any or all of these conditions might cause arthritis, pyelitis or endocarditis. In fact, a prominent school superintendent has made such public claims for the results of an oral hygiene program in eliminating retardation and delinquency and

building up physique as would appear to justify the elimination of nearly all other types of health work. Even as recently as 1919, in the book of a leading authority on schools, the flat statement was made that a tooth that is "kept clean cannot decay."

Fortunately, there is an effort on the part of conscientious leaders in the dental field, and in other fields, to secure scientifically reliable evidence as to causes and effects and relative values in preventive dentistry. For example, the Forsyth Dental Dispensary in Boston, and a number of private investigators have given able service in demonstrating the relationship between nutrition and dental decay. Such scientific backing for facts on the origin of dental decay has penetrated the public consciousness sufficiently, so that the slogan "a clean tooth never decays" appears to be no longer popular except with the manufacturers of tooth paste who so cheerfully guarantee us the combination of health and beauty.

Out of the chaos of the past a few facts are beginning to emerge with fair distinctness. There is no question that dental decay follows the general principles of breakdown in cellular structures and that the building up of an effective resistance through adequate nutrition is as important with the teeth, if not more important, than with other parts of the body. In addition to the well known fact that the early filling of small cavities halts the progress of caries we now know that the levelling of pits and fissures on the surface of the teeth of young children and filling them where necessary prevents the entry of bacteria. No one will dispute the fact that the early discovery and correction of pyorrheal conditions and abscessed roots may save untold damage in individual instances. It is clear that one of our most urgent needs is for a better understanding, on the part of a large percentage of parents and of the practicing dentists of the country, of the importance of preventive dentistry for children as well as of good food habits. This knowledge should profoundly affect our plans for oral hygiene.

It is obvious that lectures and even demonstrations on cleanliness, as the whole story of oral hygiene, are just as out of date as is the corrective program which simply treats gross conditions of decay and infection. The time has come when all who are engaged in health services should sharply challenge themselves not only as to where they are now going in the field of oral hygiene, but as to the soundness and effectiveness of their plans for the future, in the light of present day knowledge.

LEAD IN GLAZED AND ENAMELED COOKING UTENSILS[1]

AS FAR back as 1889–1891 the English Government instituted an inquiry into the solubility of lead glazes, though the concern at that time was for the health of the workers in the potteries rather than the danger of using the finished ware. The solubility in acids of the finished article was not determined. The chief question investigated was the possibility of making the lead oxide used in the glaze more or less insoluble in hydrochloric acid by fusing it with silica. It was apparently shown that the solubility of the finished lead glaze in acid depended, first, upon the proportion of silica present in the raw glaze, and second, upon the extent to which the glaze took up further silica from the article during the process of firing.

A number of cases are on record in which lead poisoning, some of which resulted fatally, occurred from the use of foods prepared or kept in glazed earthenware jars. In one case, whortle berries stored in a pot of 6 liters capacity gave

2.48 grams of lead, and subsequent treatment of the pot itself with acetic acid yielded an additional quantity of nearly a half gram. In 1919 and 1920 the examination of glazed earthenware casseroles bought in the open market in London showed that those of French make yielded from 2 to 8.1 mg. of lead oxide per square decimeter of glazed surface, while certain English casseroles gave as high as 19 mg. per square decimeter. Only 3 out of a total of 18 examined were classed as free from soluble lead, these having been sold by the makers as "leadless glaze." Cooking fruits and vegetables in casseroles of this description yielded from 0.75 to 3.4 mg. per 100 grams of foodstuffs used, and in one case 25 mg. of lead was recovered.

In 1922 an outbreak of lead poisoning was traced to the use of enameled tanks for the storage of beer, and this has led recently to an extensive inquiry by the British Government, the results of which are rather disquieting. The examinations were confined largely to the products of England and France. In France, as judged by the examples examined, the use of lead glazes, which are soluble, is common. Practically without exception the samples so examined yielded large amounts—such as must be considered highly poisonous—of lead to solutions of citric acid. It was discovered that the maximum of lead dissolved was reached after a certain time, and this was not increased by further heating, but, when the same utensils were treated with a fresh portion of citric acid solution, an additional and much larger quantity of lead was obtained. In certain tests 6 successive treatments each yielded a large amount of lead. Dr. Monier-Williams, government analyst, believes that in ordinary household usage, articles would not be subjected to such severe treatment.. Further experiments comparable to uses in the household were carried out by cooking foodstuffs in such casseroles. The results were quite variable, but it was shown that under certain conditions a considerable amount of lead was absorbed by such foodstuffs as apples and rhubarb. The same vessels in which the cooking was done were then subjected to hot citric acid solution and large amounts of lead were dissolved. It would seem that conclusions drawn from the use of citric acid solutions under prolonged heating are not entirely fair as a standard by which to judge the danger incurred for ordinary foods.

Examination of hollow ware vessels, those made from sheet iron on which enamel is fused, indicated that there was practically little danger at the present time in the use of such material. In the making of these enamels, oxides of tin, cobalt, iron, antimony, etc., are used. In none of the experiments were poisonous amounts of any of these substances found. Lead was present in practically all cases, but only in traces. Arsenic was not detected in any instance.

In view of the practicability of using leadless glazes for the making of earthenware, it seems that the government should insist upon their use. Judging from the lack of reports in this country, the danger does not appear to be an imminent one, but since it can be entirely ayoided without injury to the commercial interests, there is apparently no good reason why soluble lead glazes should be allowed under any circumstances.

1. *Reports on Public Health and Medical Subjects.* No. 29. Ministry of Health, London.

ASSOCIATION NEWS

PROPOSED AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

For the past two years committees have been studying the organization of the Association. Many meetings have been held to discuss the several phases of the matter and the results of these discussions have been assembled by the Committee on Constitution into a report, which will be made at the Buffalo Meeting. To put the recommendation of the committee into effect it will be necessary to amend both the Constitution of the Association and the By-Laws. In general, these changes are designed to assure a greater participation in the management of the Association by the members and Fellows and to provide for a close affiliation between the American Public Health Association and its affiliated societies.

In accordance with the Constitution the proposed amendments to the Constitution are herewith officially published:

Article III—Governing Council

Section A at present reads as follows:

> A. *Composition:* There shall be a Governing Council consisting of:
>
> 1. The officers of the Association.
>
> 2. Thirty members of the Council, to be elected with due regard to geographical and membership considerations, by and from the Fellowship of the Association, for three-year terms, one-third retiring each year.
>
> If one of these members is elected a Section Chairman, Vice-Chairman, or Secretary, a new Councilor to fill such vacancy shall be elected by the Association.
>
> 3. The Chairman, Vice-Chairman and Secretary of each Section.
>
> 4. A representative to be appointed by the governing body of each affiliated state health society to serve for one year on the Governing Council. Such representative shall be a Fellow of the American Public Health Association.

It is proposed to amend this section to read as follows:*

A. Composition: There shall be a Governing Council consisting of:

1. The officers of the Association.

2. Thirty members of the Council, to be elected with due regard to geographical and membership considerations, by and from the Fellowship of the Association, for three-year terms, one-third retiring each year. *These members of the Council shall be nominated and elected as provided for in the By-Laws.*

If one of these members is elected a Section Chairman, Vice-Chairman, or Secretary *or appointed the representative of an affiliated society* a new Councilor to fill such vacancy shall be elected. * * *

3. The Chairman, Vice-Chairman and Secretary of each Section.

4. A representative to be appointed by * * * each affiliated * * * society to serve for one year. * * * Such representative shall be *at the time of his appointment* a Fellow *in the Public Health Administration Section* of the American Public Health Association.

5. *The elective members of the Council of the Public Health Administration Section.*

Article IV—Officers

This article at present reads as follows:

> The officers of this Association shall be a President, three Vice-Presidents, an Executive Secretary, and a Treasurer. The officers, with the exception of the Executive Secretary, shall be nominated and elected by written ballot of the Governing Council. Officers shall serve from the close of the annual meeting when elected, until the close of the next annual meeting, and until their successors are elected and qualified. A majority vote of the Councilors voting shall be required to elect, and if no candidate receives a majority vote on the first ballot, the candidate receiving the smallest number of votes shall be dropped after each ballot in succession until a majority vote is obtained. The Executive Secretary shall be elected by and serve at the pleasure of the Executive Board.

* Italics indicate new material, asterisks ommissions.

It is proposed to amend the second sentence to read as follows: The officers, with the exception of the Executive Secretary, shall be * * * elected by written ballot of the Governing Council *as provided in this article and in the By-Laws.*

BY-LAWS

Amendments to the By-Laws will be presented in writing to the Governing Council at its first meeting in Buffalo. They will be acted on by the Council at a subsequent meeting. Although these amendments have not yet been definitely framed the Committee is able to report that they will provide for the election of elective councillors by written ballot of the fellows upon the nomination of a nominating committee appointed in advance of the meeting.

The committee will recommend the abolition of the associate membership class and provide for an affiliated membership to include members of affiliated societies. Other minor changes to simplify the By-Laws will be offered.

The Public Health Administration Section will probably ask the Governing Council to ratify changes in its section constitution and By-Laws affecting membership and fellowship in the section.

LIST OF NEW MEMBERS

JUNE

Marie Alamo Boden, R.N., Denver, Colo., Field Secretary, Colorado Tuberculosis Association

Ellen Louise Buell, R.N., New York, N. Y., Educational Director New York Visiting Nurse Service

Amos Field, Jr., Kearney, N. Y., Health Officer

Edward J. Godfrey, M.D., Waterbury, Conn., Health Officer

Edward S. Godlieb, M.D., Dr.P.H., Colombo, Ceylon, Medical Officer of Health, Ceylon Government Medical Service (Assoc.)

George W. Haan, M.D., Aurora, Ill., Health Commissioner

Marjorie M. Heseltine, M.A., New York, N. Y., Director of Food Research, Hills Brothers Company, New York City

Vincent B. Lamoureux, Tampa, Fla., Sanitary Engineer, State Board of Health

Sidney S. Listernick, M.D., Everett, Mass., City Physician

Alfred J. Lotka, M.A., D.Sc., New York, N. Y., Supervisor of Mathematical Research, Statistical Bureau, Metropolitan Life Insurance Company

Sam F. Perkins, M.D., Redondo Beach, Calif., District Health Officer

Clara H. Pierce, M.D., Syracuse, N. Y., Physician to the Bureau of Child Hygiene, Department of Health

Mary A. Readett, Hartford, Conn., Principal Outdoor School

Alberto de Paula Rodrigues, M.D., Rio de Janiero, Brazil, Chief Sanitary Inspector of Milk and Milk Products, Brazilian Health Department

William B. Sharp, A.B., S.M., M.D., Ph.D., Galveston, Tex., Professor of Preventive Medicine, University of Texas Medical Department.

Richard Thompson, A.B., M.D., Roseburg, Ore., County Health Officer

Butler Toombs, Atlanta, Ga., Director, Bureau of Vital Statistics, State Board of Health

Arthur C. Weinberger, A.M., New York, N. Y., Director, Diagnostic Laboratory

William O. Vogwell, M.D., Sydney, Australia, Chief Health Inspector, Sydney City Council

Clarence William Winchell, B.Sc., Jersey City, N. J., Jersey City Board of Health

Ben F. Wyman, M.D., Columbia, S. C., Director, Department of County Health Work, State Board of Health

JULY

John J. Aeberly, B.S., Chicago, Ill., Chief, Division of Ventilation, Department of Health

Mrs. Hermann M. Biggs, New York, N. Y. (Assoc.).

Luther A. Black, M.S., Springfield, Ill., Bacteriologist, State Department of Health

Harriet Bixby, Hartford, Conn., Assistant to Director, Bureau of Laboratories, State Department of Health

Bertha J. Boutelle, A.B., Woburn, Mass., Life Conservation Service, John Hancock Life Insurance Company

Robert Miller Boyd, M.D., C.M., Fort William, Canada, Medical Officer of Health

William A. Claxton, M.D., C.M., Miami, Fla., Director, Division of Health

Maurice H. Coblentz, A.B., Baltimore, Md., Chief, Division of Chemical Technology, Bureau of Chemistry and Food, City Health Department

Presley Stuart Combs, Chicago, Ill., Assistant Chief, Bureau of Sanitary Engineering, Department of Health

James A. Crabtree, B.S., M.D., Sevierville, Tenn., Director, Sevier County Health Unit

Michael Cramer, M.D., Los Angeles, Calif., President, Los Angeles Health Commission, Member Health Committee Los Angeles Chamber of Commerce

Philip Neri Cullen, Los Angeles, Calif., Junior Sanitary Officer

D. J. A. Deschines, M.D., Beauceville, Canada, County Board of Health Commissioner

William J. Dixon, B.S., Chattanooga, Tenn., Public Health Engineer, Chief, Bureau of Sanitation and Inspection, Department of Health

Raymond S. Domingo, Tampa, Fla., Chief Sanitary Officer

Thomas C. Edwards, Jackson Heights, N. Y., Acting Executive Officer, National Health Council

Will A. Foster, Chicago, Ill., Director, Educational Department, Borden's Farm Products Co., of Illinois

R. C. Garrett, M.D., Kingston, Tenn., In training for County Health Work

George H. Gehrmann, M.D., Wilmington, Del., Industrial Medicine, E. I. DuPont de Nemours & Co.

Edna A. Gerken, A.B., C.P.H., Republican City, Nebr., Health Education Teacher High School, Fall River, Mass.

Bertha H. Gibbons, R.N., Buffalo, N. Y., Chief Nurse, Communicable Diseases, Department of Health

Augustus G. Gigger, M.D., Providence, R. I. Epidemiologist

Yeranos B. Habeshian, B.S., M.S., Cleveland, O., Chemist, City Filtration Plant

Freda Haffner, M.D., Huntington Park, Calif., Deputy County Health Officer

Warren A. Harrison, B.P.H., D.P.H., M.D., Fort Myers, Fla., District Medical Officer
Charles C. Hopkins, B.S., C.E., Rochester, N. Y., Engineer designing Water Works and Sewage Systems and Water Disposal
Anna L. Jenkins, Cleveland, O., Assistant Director, University Public Health Nursing District
John F. Johnston, Newport, R. I., Inspector of Milk, Board of Health
Frank L. Letts, M.B., D.P.H., Ottawa, Canada, Director of Branch Laboratory
Morley S. Lougheed, B.A., M.D., C.M., B.Sc., Winnipeg, Canada, Bacteriologist
Emygdio Mattos, M.D., Rio de Janeiro, Brazil, Medical Officer, Brazilian Public Health Service (Assoc.)
Oscar M. McAulay, Redondo Beach, Calif., Sanitary Officer
Aileen McBrien, A.B., Oakland, Calif., Medical Social Case-worker, Berkeley Health Center, Berkeley, Calif.
George N. McDaniel, Jr., B.S., Portland, Ore., State Sanitary Engineer
John W. Meehan, Major, U. S. Med. Corps, Washington, D. C., Sanitary Inspector of Public Buildings and Parks, District of Columbia
Edward V. Murphy, M.D., Newport, R. I., Executive Officer, Board of Health; Medical Officer in Charge, U. S. Public Health Service
Charles Nelson, A.B., Pasadena, Calif., Sanitary Expert
Jane J. Packard, A.B., Metuchen, N. J., Executive Secretary, Middlesex County Tuberculosis League
Romulo V. Ramirez, M.D., Mexico, D.F., Assistant Physician of the Disinfection and Desinsectization Departments
William M. Rapp, M.D., Catskill, N. Y., Health Officer, Medical School Inspector
Thomas Asbury Ratliff, A.B., M.D., Cincinnati, O., President, Public Health Federation of Cincinnati
Germinal Rodríguez, M.D., Buenos Aires, Argentina (Assoc.)
Thomas R. McCrea, B.S., Morehead City, N. C., Chemist and Bacteriologist, State Board of Health
Samuel M. Schmidt, B.S., Winthrop, Mass., formerly with Boston Board of Health
Albert E. Sheets, Pomona, Calif., Sanitary Officer
Lewis Shere, B.S., Chicago, Ill., Director, City Division, Bureau of Dairy Products, Department of Health
Frank W. Shipman, M.D., Mt. Vernon, N. Y., Commissioner of Health
Charles M. Siever, Ph.G., M.D., Manhattan, Kans., In charge of Department of Student Health, Kansas State Agricultural College
Ernest William Steel, C.E., College Station, Tex., Professor of Municipal and Sanitary Engineering, Texas Agricultural and Mechanical College
Herbert R. Stolz, M.D., Sacramento, Calif., State Supervisor of Physical Education
Jean Taylor, R.N., B.S., Minneapolis, Minn., Assistant Superintendent and Supervisor of Instruction, Visiting Nurse Association
Raymond C. Taylor, Hollywood, Fla., Director, Health and Sanitation
Robert C. Thomas, B.S., Madison, Wis., Research Assistant, Bacteriology Department, University of Wisconsin
Anna B. Towse, New York, N. Y., Editorial Associate, AMERICAN JOURNAL OF PUBLIC HEALTH
C. B. A. Turner, M.D., Union City, Tenn., Director, Obion County Health Unit and County Health Officer
Mom Chao Vallabhakorn, M.D., Bangkok, Siam, Director, The Health Section, The Siamese Red Cross Society (Assoc.)
Grace Van Doorn, B.A., Milwaukee, Wis., Senior Bacteriologist, Milwaukee Health Department
Rogers F. Wakefield, M.D., Hollywood, Calif., Deputy Health Officer
H. A. Walker, B.S., M.D., Hollywood, Fla., Former President Hollywood Board of Health, Surgeon for Hollywood Land and Water Company
Henry S. Willis, M.D., Baltimore, Md., Associate in Medicine, Johns Hopkins Hospital

APPLICANTS FOR FELLOWSHIP

CHILD HYGIENE: Jules Leon Blumenthal, M.D., New York City.

INDUSTRIAL HYGIENE: Elizabeth B. Bricker, M.D., Harrisburg, Pa.; Frederic Schiller Lee, New York City.

PUBLIC HEALTH NURSING: Annie Warburton Goodrich, R.N., New Haven, Conn.; Mary Agnes Hickey, R.N., Washington, D. C.; Ruth Houlton, R.N., Minneapolis, Minn.

UNAFFILIATED: Robert Fitzpatrick, M.D., Tabasco, Mexico; John L. Rice, M.D., New Haven, Conn.; Elizabeth McVreen Saphro, M.D., Los Angeles, Cal.

LETTERS TO THE EDITOR

TO THE EDITOR:

The editorial policy of our JOURNAL in the matter of pasteurization of milk, has become so partisan and unfair that I feel some protest is called for. Apparently the anonymous editorial writer feels justified in usurping the duties of the recently appointed Committee of the American Public Health Association on Milk Products and in settling the whole debatable question of temperature of pasteurization out of hand. Apparently in defiance of the rule printed at the head of the editorial page, the voice of one man is made to represent the American Public Health Association under cover of the editorial column and under conditions which not only conceal the identity of the writer, but make it difficult for anyone to submit the other side of the question.

My present purpose is not to discuss the merits of this question with the editor but rather to question the desirability of this mode of procedure in discussing matters of scientific interest. The writer in question ignores the general results and conclusions of the authors of Public Health Bulletin 147 (Commercial Pasteurization) but accepts most readily the critical review of that work which appeared in the JOURNAL of August, 1925. The reviewer is not a bacteriologist but he has for some years past vigorously opposed the regulations of New York and many other large cities in regard to a safe minimum pasteurization temperature. His review of Bulletin 147 consists in an attack upon a single non-essential statement in the general conclusions.

The editorial comment in the July number of the JOURNAL utilizes this alleged review as a basis and refers without further illustration to the "errors in Bulletin 147" which certain unnamed persons have pointed out to the Surgeon General of the Public Health Service.

It would be interesting and possibly instructive to learn just who has taken upon himself the responsibility of suggesting to the Surgeon General that a scientific publication be modified to suit his individual views and who takes such "great pleasure" in announcing that the conference of state and provincial health authorities has "unanimously adopted as a standard for pasteurization, a temperature of 145° maintained for thirty minutes." By what authority also does this anonymous editor warn the health officials of the country against the dangerous teachings of Bulletin 147 and congratulate the conference of health authorities upon its "stand for the public welfare"?

It seems to me that the members of the Association who are supporting this JOURNAL are at least entitled to an answer to this question. It would also seem to me, although this is quite beside the present issue, that the proponents of 145° might, in their turn, submit a little scientific data instead of attempting to settle this important matter by resolution. Furthermore I am sure you will agree with me that the present editorial attitude of our JOURNAL is exceedingly discourteous to the investigators who have attempted to add to our scientific knowledge of this study, who have not free access to our editorial columns and who, I am sure, would not take advantage of such means of attack even were it open to them. And finally, this entire matter is in the hands of a committee of this Association presumably competent and certainly conscientious, and for an anonymous editor to attempt to prejudge the entire case while it is thus being considered, cannot fail to discredit our organization and the professional work for which it stands.

Very truly yours,

EARLE B. PHELPS

Professor of Sanitary Science,
Columbia University.
New York City.
July 27, 1926.

TO THE EDITOR:

Fair criticism is always welcome but criticism based on misunderstanding and misstatement of facts requires an answer.

The editorial policy of our JOURNAL is controlled by the Editorial Committee, whose names are published in full in each issue of the JOURNAL. The majority of the editorials are written by the Chairman, not by choice but through necessity, since in spite of many requests for editorials the number received is small. All editorials are submitted to the Chairman and to the Managing Editor and these two men are directly responsible for those published.

The claim that the editorials conceal the identity of the writer and make it difficult for anyone to submit the other side of a question cannot be taken seriously. One can hardly believe that Professor Phelps is so ignorant of the conduct of Journals and the manner of approaching the management, as not to know

that a letter to the Editor would at any time give him the name of a writer, and bring his complaint to the attention of the responsible parties. The further statement that authors and investigators who are responsible for Bulletin 147 did not have free access to our editorial columns is entirely untrue. Will Professor Phelps tell our readers of any instance in which an editorial was offered and rejected? Some of these men have been requested to write editorials.

The claim that our editorial policy has become partisan and unfair cannot be sustained. In November, 1925, we published an article by Professor Phelps on pasteurization. In April, 1926, we published the report of the Committee on Dairy Products and Eggs, in which the bugaboo of "one of the most insidious artifices devised by the enemies of pasteurization and advocates of raw milk," namely an excessively high temperature for pasteurization, was raised—apparently the figment of an overwrought imagination. In June we published the letter of Mr. Nathan Straus concerning this, all without comment. It does not appear that the policy of the JOURNAL has been so markedly one-sided and partisan.

We beg to refer our readers to the review of Bulletin 147 published in August, 1925. This review was based upon a careful analysis of the Bulletin checked by two men in addition to the writer. In the year that has passed, no one has pointed out that these criticisms were erroneous. On the other hand attacks have been made upon the reviewer. In our opinion those who wish to defend Bulletin 147 should show that errors were made in that review and discontinue their attempts at discrediting the reviewer. The claim that the review consists "in an attack upon a single non-essential statement in the general conclusions" is best refuted by the review itself, which covers two and a half pages, and we again ask our readers to refer to it.

The editorial in the July number of the JOURNAL was not based upon this review as stated. The Chairman of the Editorial Committee had a copy of Bulletin 147 when it was in page proof. This was submitted to Dr. Henry Vaughan and to others, and its contents were pretty well digested before its final publication.

The Chairman of the Editorial Committee is the "unnamed person" who submitted a statement of the errors in Bulletin 147 to the Surgeon General of the Public Health Service. He did not "take upon himself the responsibility of suggesting that a scientific publication be modified to suit his individual views." Certain errors were pointed out and the unfair use of certain experiments was shown, some of which were acknowledged by the Surgeon General. He urged upon the Surgeon General that these mistakes be corrected and that Bulletin 147 be reviewed or criticised by some member of the Public Health Service and that the Service itself should do this work in order to avoid criticism from the outside, which has been quite severe.

It will be seen that no attempt was made in this request to suggest the proper temperature of pasteurization, nor were individual views urged upon the Surgeon General for publication in this review. Professor Phelps suggests that it is time for the proponents of 145 degrees to submit scientific data. He has evidently overlooked the statement in the editorial in our July issue which has so aroused his indignation, that material was offered to the Surgeon General, but the offer was not accepted. He might also with advantage read the text of the report presented to the Conference of State and Provincial Authorities which ended in their unanimous resolution supporting a temperature of 145 degrees F. for 30 minutes as a standard for pasteurization. The Conference is made up of health officers and represents the best thought and practice in regard to public health administration. Surely we are not going far astray in commending a well considered action by such a body for acceptance.

Professor Phelps also charges that the "anonymous editorial writer" feels justified in usurping the authority of the newly appointed Committee on Milk Products, and "settling the whole debatable question of temperature out of hand." Nothing could be farther from the truth. The first editorial urged that no changes be made prior to the report of this committee. Our recent editorial repeats this statement and urges that the standard should not be lowered until better evidence than is now at hand has been brought forward for its justification.

The Association has never adopted a standard for pasteurization. No person has a right to make any claim for the Association in regard to a standard until the recently appointed committee reports *and the report is accepted.* In the meantime, discussion is entirely justifiable.

A further charge of discourtesy to those responsible for Bulletin 147 is made. We regret that anything we have said has been so con-

strued even by one man, but scientific truth is more important than the feelings of any man or group of men.

We trust that this furnishes the answer to which Professor Phelps thinks the members of the Association are entitled. There has never been any attempt at or desire for concealment. We will be glad to answer any further questions which any member of the Association cares to ask.

M. P. RAVENEL
Chairman Editorial Committee,
American Journal of Public Health.
August 2, 1926.

TO THE EDITOR:

The following statement published in the May JOURNAL is incorrectly attributed to the National Organization for Public Health Nursing:

"The N.O.P.H.N. states that there are 50,000 nurses in all and that 12,000 are engaged in public health work. They also estimate that 15,000 nurses are graduated yearly."

The American Nurses' Association which gave the information about the number of registered nurses in the United States, states that the 50,000 nurses referred to is the number of nurse members of the association. At present there are approximately 288,811 registered nurses in the United States and 15,000 nurses are registered yearly.

Very truly yours,
THERESA KRAKER
Associate Director,
National Organization for Public Health Nursing,
New York City.
July 20, 1926.

TO THE EDITOR:

I wish to commend most heartily your editorial on page 716 of the July, 1926, number of the AMERICAN JOURNAL OF PUBLIC HEALTH. My attention was called to the action of the Public Health authorities many months ago. I looked over Bulletin 147 and came to the same conclusion to which you and the Conference of State and Provincial Health Authorities of North America have unanimously reached, namely, that the temperature of 145° F., maintained for 30 minutes is the only entirely reasonable safeguard in the pasteurization of milk.

The experiments which were conducted by the Borden Farm Products Company, in my opinion, had the ulterior motive of lowering the temperature of pasteurization to a degree which would permit the maximum volume of cream to rise to the surface. In this way they could point to the cream on the bottle with pride and say, "We have more cream in our milk than our competitors have in theirs."

There seems to be no effort whatever to safeguard the health of the public. How the Surgeon-General could take a privately conducted investigation of this kind and publish it as a bulletin of his high office is beyond my understanding. I think you strike the nail squarely on the head in your editorial.

Very truly yours,
H. W. WILEY
Director, Bureau of Foods, Sanitation and Health,
Good Housekeeping Magazine,
July 13, 1926.

TO THE EDITOR:

In your editorial, "Nitrites Permitted in Meats," appearing in the February issue of the AMERICAN JOURNAL OF PUBLIC HEALTH, there appears the following:

"Thus another extraneous substance in addition to those which have already been permitted has entered into our national food supply."

Exception must be taken to this statement as not in accordance with or fairly representative of the facts. On account of the practically universal use of nitrates in meat curing, all commercially cured and practically all home cured meats contain nitrites. The action of the Department in authorizing the use of nitrites in meat curing does not, therefore, involve the entry of "another extraneous substance into our national food supply."

Your further comment, "It might be that the direct use of nitrites is an improvement over the older method since there will not be in the new process also a residuum of nitrate which may have its own effect," touches directly on the actual effect of the change in the Meat Inspection Regulations. The formation of nitrite from nitrate in the process of curing is a biological process which does not always proceed uniformly and cannot be controlled with precision. The nitrate is never converted entirely into nitrite, so that there is always a residuum of unconverted nitrate remaining in the meat. The conversion factor being variable, it has been customary to use a sufficient

amount of nitrate to insure the production of an adequate amount of nitrite in event the proportion converted is low. This may and not infrequently does result in the formation of much more nitrite than is required for the fixation of color. When the nitrite is used directly as such, the residuum of unconverted nitrate is eliminated and the nitrite content of the meats can be controlled within narrow limits. The elimination of the residuum of unconverted nitrate and the accurate control of the nitrite content of the meat are two definite advantages to the public health which have been gained by permitting the direct use of nitrites.

I cannot agree with the inference conveyed in the "Letter to the Editor" which appears on page 162, in effect that nitrates or nitrites "produce" a red color in meats, nor is it correct to refer to the use of nitrites as "a use of dyes." As a matter of fact, nitrites neither "produce" nor add to the color of meat, but merely hold or fix the original tint of the coloring matter of the blood normally present in fresh meat and prevent it from becoming bleached during the process of curing with ordinary salt. The comparison of the use of nitrites in curing meats to hold the normal color, with the use of nitrites in flour to bleach flour white is not a fair comparison. And the statement that "we now add to this danger by eating meats cured with nitrite of soda" is inaccurate, for it is well known that nitrates have been used for centuries in curing meats and everyone in this and many previous generations who has eaten meats where nitrates were used in the cure, has been consuming nitrites.

As a result of the former meat inspection regulation, the amount of nitrate (saltpeter) found in a number of tests of cured meats averaged 1,500 parts per million, while the amount of nitrites in the same samples averaged 725 parts per million. Under the new regulation there will be no nitrates present in these cured meats and recent tests show that most of the samples examined since the new regulation was issued contain but 50 parts of nitrites per million, while the amount permitted is restricted to 200 parts per million. In view of these results which cannot be successfully refuted, I would like to ask any unbiased fellow member of our Association whether the present regulation is not a distinct improvement over the old regulation which accepted a time-honored custom until it was superseded as a result of scientific research.

Very truly yours,

J. R. MOHLER

Chief, Bureau of Animal Industry,
U. S. Department of Agriculture,
Washington, D. C.
March 5, 1926.

BOOKS AND REPORTS

Bats, Mosquitoes and Dollars—*By Dr. Charles A. R. Campbell. Boston: Stratford,* 1925. Price, $3.00.

The introduction of this book is by Ernest Thompson Seton, the eminent American naturalist, who suggests that it might be a greater boon to mankind to extirpate the mosquito than to stamp out tuberculosis.

The book is divided into four parts: Part One—Bats, Mosquitoes and Dollars; Part Two—Dragon Flies; Part Three—Bedbugs and Smallpox; Part Four—Functions of the Spleen.

About two-thirds of the book is given over to Part One which contains, in the beginning, the four following allegations:

"Allegation One—That the malarial mosquito is one of the greatest enemies of mankind.

"Allegation Two—That the bat is one of man's best friends because it so relentlessly destroys the malarial mosquito, that insect being its natural and principal food.

"Allegation Three—That we can build a home for bats in a scientific manner to meet the requirements of their most singular habits, and one which they will inhabit; a home where they will increase in countless numbers and eradicate malaria in its vicinity.

"Allegation Four—That each bat roost, in addition to the great hygienic value, is in itself a little gold mine, by reason of the cash obtained from the natural high grade fertilizer, guano, which it will constantly produce."

Supporting the first allegation, the author tells of the annual losses in this country due to

malaria, its effect on individuals and of the cause of the disease. When the mosquito bites, the malaria parasite is implanted in the human body where it at once establishes itself in the red corpuscles of the blood and immediately commences to impair the health of the individual.

In the second chapter of the first part of the book, there is a description of the natural habitat of bats and their habits both in their normal home and while flying about. It appears that bats are equipped with super-acute senses which aid them in securing their food, the main part of which happens to be mosquitoes.

Chapter three deals with building bat roosts. After several trials, the author was successful in constructing a home for bats in the vicinity of Mitchell's Lake near San Antonio, Texas. This lake receives the sewage from the entire city which makes it an ideal breeding place for mosquitoes. It is said that after the colony of bats had been established, the mosquitoes decreased in numbers so that the inhabitants in that vicinity were not so much annoyed by the pests and neither did they suffer from so much malaria.

It is interesting at this point to note the conclusions of Dr. Edward W. Nelson, Chief of the Bureau of Biological Survey, United States Department of Agriculture, in an article entitled "Bats in Malaria Control," on page 611 of the June issue of the AMERICAN JOURNAL OF PUBLIC HEALTH. Dr. Nelson's studies lead to conclusions quite opposite to those set forth by Dr. Campbell.

Bat guano is valuable as a fertilizer and here is the fact which accounts for the "Dollars" in the title of the book. Some of the caves in Texas have been known to produce as much as eighty tons of the material yearly. It is sold on the basis of its fertilizing constituents and there appears to be a ready market for it to florists and fruit growers. Reference might also be made here to Bulletin 25 by P. L. Gile and J. O. Carrero of the Porto Rico Agricultural Experiment Station which deals with the bat guanos of Porto Rico and their fertilizing value.

The bat preys upon mosquitoes of the nocturnal variety. In Part Two, Dr. Campbell finds that the dragon fly is a valuable ally for humanity, for it attacks the diurnal mosquitoes. The characteristics, habits and breeding of the dragon fly are described, but the remark is dropped that there is much to be learned about them. It appears that it is a difficult matter to grow dragon flies without growing mosquitoes in the same receptacle and at the same time.

Part Three contains a foreword by the eminent bridge engineer, Dr. J. A. L. Waddell. The three following papers make up this section of the book: Résumé of Experiments on Variola; My Observations on Bedbugs; and Eradication of Small Pox by Other Means than Vaccination.

The last named paper was written by Dr. J. A. Watts.

The bedbug observations lead the author to believe that this pest has much to do with the spread of smallpox, and that it may be possible to prevent the disease from spreading by other methods than vaccination. This is indeed important in the matter of public health.

Part Four, *Functions of the Spleen*, is a paper which was delivered before the Bexar County Medical Society in 1924. It is here explained that the spleen contains the defensive agent against the malaria parasite.

The book is written in semi-popular style and is exceedingly interesting and easy for the non-technical person to read. It contains some 260 pages and about 70 illustrations. There is a glossary of 4 pages in the back.

BYRON BIRD

A Health Education Procedure for the Grades and Grade Teachers—*By Kathleen Wilkinson Wootten. New York: National Tuberculosis Association*, 1926. 420 pp. Price, $1.00.

The cry for more ammunition has run back from the firing line of teachers struggling to substitute a vital health education for the dead memorizations of the past. "Show us methods of teaching health that 'take,' give us source books of material, tell us where we can get the information we want," are challenges to be heard today from every school system. To meet the demand to some extent, the National Tuberculosis Association has published Mrs. Wootten's volume.

"A Health Education Procedure" for the grades and grade teachers, is the fruit of the author's eight years of experience as director of health education at the Georgia State College for Women. It attempts in Part I to clarify the teacher's personal problems in relation to health teaching, and to discuss various important phases of health education, such as school

hygiene, health supervision of the school child, physical education, safety education, and the parent's part in health education. Various difficult subjects in health education are treated suggestively and particular emphasis is given to the discussions of the methods and materials for the teacher of health.

Part II consists of Courses of Study for the grades, and Junior and Senior High Schools. It is these so-called courses of study that the author has tried out in actual practice. An appendix with selected sources of free and inexpensive source material, a selected bibliography on mental hygiene, and a series of review questions, complete the volume.

Such a volume by its very nature is easily susceptible to criticism. Those furthest in the vanguard will be at variance with the relative values placed on certain phases of the health education program, ignoring the Report of the Joint Committee on Health Education of the N.E.A. and the A.M.A., as well as the Health Education Conferences of the American Child Health Association. The skeptic will seek in vain for evidences of the effectiveness of the various methods and materials so copiously supplied. The teacher who must select from among the frequent references to publications and source material, will regret that the date of publication is seldom given, and anyone familiar with the important literature of the past two years will regretfully note, with rare exception, its omission. In the concreteness and the effective organization of the subject matter and the source material, the book makes a distinct contribution to health education. It contains a fund of organized, classified information which the average teacher of health will gratefully accept and it should do much to promote the teaching of health in our schools.

PHILIP S. PLATT

The **Bacteriophage and Its Behavior**—*By F. d'Herelle. Baltimore: Williams & Wilkins*, 1926. 629 pp. Price, $8.00.

At present, there are few subjects of scientific research which hold greater fascination than the bacteriophage. The name of d'Herelle is so closely associated with work on this subject that an announcement of a new book by him is sufficient to stimulate interest on the part of research workers and readers.

As in his previous books, d'Herelle has gone back over earlier work, and has made his book a complete rather than a supplementary volume. The cover page of the book describes it as a "Review of all work done in (sic) the bacteriophage," and this is an excellent description. D'Herelle has assembled and analyzed the experimental results of an unbelievably large number of papers by himself and other workers, and has added valuable criticisms which combine to make this book an excellent reference on the subject of bacteriophage.

There are three parts, preceded by an historical introduction. Part I, called "The phenomenon of Bacteriophagy," deals with the bacteriophage in vitro. Although a considerable part of this work has been published before, readers will find it worth while and presented in a somewhat new form. The chapter on "The Resistance of Bacteria" is especially interesting in view of present work on mutation and variation of bacterial species. Bacterial mutation—usually transitory, but sometimes lasting—is believed by d'Herelle to be the result of contact with the bacteriophage, and return to normal form is seen upon removal of the bacteriophage. Abnormalities occasionally encountered in laboratory cultures are assumed to be due to "contaminations" by bacteriophage corpuscles, and separation may be accomplished.

Part II is given over to proof of the living nature of the bacteriophage. D'Herelle regards it as a living organism, ubiquitous, foreign to the bacterium, and conforming to the criteria for living things—the power of assimilation in heterologous medium—and of adaptation. These chapters are very interesting but leave one with the feeling that d'Herelle's conclusions are perhaps somewhat hypothetical and that sufficient scientific proof is lacking. Further exact work such as that done by Bronfenbrenner[1] with the respirometer in which he found no indication of production of CO_2, which he regards as a qualification for living things, will be needed to solve this question.

The third division of the book, "The Behavior of the Bacteriophage Protobe," contains much interesting and valuable data regarding the clinical application of the bacteriophage.

The book, written in d'Herelle's usual readable style, excellently translated by Professor George H. Smith, will fill a real need in collecting practically all of the published data on the subject into one volume, and will be welcomed by everyone interested in this subject.

M. P. RAVENEL

[1] *Science*, 63:51–52, 1926.

A Popular Encyclopedia of Health—*By Lee K. Frankel, Ph.D., Second Vice-President, and Donald B. Armstrong, M.D., Assistant Secretary, Metropolitan Life Insurance Company. New York: Boni,* 1926. 366 pp. Price, $3.50.

Formerly, almanacs were the family source of information concerning symptoms and their treatment. This popular encyclopedia is a novel method of diffusing knowledge for the preservation of health in a practical and useful form. It places emphasis upon prevention rather than cure. It suggests only the simplest household remedies and always advises calling the doctor when suggestive symptoms appear. The topics are well selected, the style clear and terse, and the advice sound and sensible. In the discussion of disorders and diseases there is intentional avoidance of prescribing medical treatment and self-diagnosis is discouraged. The authors' aim is to enable the reader to understand the seriousness of given disorders and to know when he should consult a physician.

The book differs from books and pamphlets on health previously published in being primarily a home reference book rather than a textbook or a book for general reading. It is free from confusing details and technical terms, and at the same time gives the latest scientific data on health subjects. The topics are arranged alphabetically and cover a broad field. They deal with personal hygiene—bathing, care of the eyes, care of the teeth, diet, etc.; with the care and management of the home; with problems of community sanitation—garbage, sewage, milk, water supply, etc.; with the home care of the sick; with industrial conditions that threaten health; with special health problems, such as prenatal care and care of babies; with school health, with first aid measures for common emergencies, and with official and private health agencies. The common preventable and communicable diseases are described briefly. In addition to physical disorders, some of the more common defects of nerves and mind are included, with common sense rules for following mental habits that lead to mental health. Special effort has been made also to treat the problems of those who live in the country and in small towns, as well as the problems of city dwellers.

The book will serve a purpose of practical everyday usefulness for everyone. The authors are past grand masters of the art of health education, and the results of their rich background of experience are shown on every page. The Encyclopedia is timely and should prove of real service. The book is well printed, sufficiently illustrated, and carries its own index, as the subjects are arranged alphabetically. It is well named, for it is encyclopedic in scope, and should become popular in use and one of the means to promote health. M. J. ROSENAU

Science, Religion and Reality—*Edited by Joseph Needham. Sheldon Press (Macmillan, American distributors),* 1925. 396 pp. Price, $2.50.

This book, to which Joseph Needham has also contributed, presents a very unusual series of essays, each one written by an expert on his particular subject. It is, therefore, beyond the reach of ordinary criticism. It is intended to show the relations which exist at the present time between science and Christianity, being neither a defense nor a criticism. It may be regarded as an expression of the opinions of nine well known writers who are scientists and philosophers.

Two of the essays are written by medical men. Dr. Charles Singer has given us the historical relations between religion and science, and has brought his review down to the period which he calls the reign of law, which was ushered in by the abundance of new discoveries in science in the early part of the 17th century. The treatment of the subject for the 19th century has been given by Dr. Antonio Aliotta, Professor of Philosophy in the University of Naples. Dr. William Brown, Wilde Reader in Mental Philosophy at Oxford, writes of the relation between religion and psychology, and gives a masterly analysis of the relation of suggestion, faith and mysticism to the everyday working of the mind. Every article in the book is of intense interest from some standpoint, but those we have mentioned are of chief interest to the physician and those interested in preventive medicine.

The book begins with an excellent introduction by Lord Balfour, and ends with a review of the various articles by Dean Inge, who makes no attempt to harmonize the views put forward by the authors, but comments on what seem to be the leading ideas of the writers.

The book is deep reading, but every article is replete with information of intense interest to mankind from whatever standpoint we may see fit to consider it. M. P. RAVENEL

Planning a **Tuberculosis Sanatorium. Technical Series No. 6**—*By T. B. Kidner. New York: National Tuberculosis Association,* 1926. 36 pp. Price, $.25.

This monograph by Mr. Kidner, the Institutional Secretary of the National Tuberculosis Association, is not only interesting and well worth reading for anyone at all interested in the tuberculosis problem, but should prove of inestimable value to any individual or organization contemplating the construction or alteration of a tuberculosis sanatorium. The entire book is written in such a way as to make the plans applicable to either a small or large institution.

Simply and interestingly written it covers the subject in a most comprehensive manner without overburdening the reader with too minute details. Reasons for recommending special types of construction are clearly given, and throughout the building plan there is a most commendable consideration for the safety and comfort of both patients and sanatorium personnel. The psychological effect upon the patient of the arrangement of the various units is given special attention. Cognizance is likewise taken of the growing tendency to provide more privacy of patients. CARL E. BUCK

The **Path of the Gopatis**—*By Zilpha Carruthers. Chicago: National Dairy Council,* 1926. 100 pp.

When the day of history-making dawned, Gopatis, the Lord of the Cows, was a powerful figure among men. Throughout the centuries the cow has played an important rôle in the progress of the human race and civilization.

As the title indicates the story is woven about the progress of the Gopatis from ancient times to the day of modern dairies, pasteurization and the emphasized importance of milk in the human diet and the discovery of its vitamin content. It is told in a charming manner. The author has never once strayed away from the human element that must be considered in a book meant to be entertaining as well as informative. A story of dairying ordinarily suggests pages of prosaic facts and statistics, but Miss Carruthers has made hers into a romantic tale, one that the grown-ups will share with equal enjoyment with the children.

Adding to the attractiveness of the book are the illustrations by Jessie Gillespie. The scientific facts regarding milk have been approved by Dr. E. V. McCollum who contributed the introduction. A. B. T.

Health Heroes: Louis Pasteur, Edward Livingston Trudeau, Edward Jenner, Walter Reed—*By Grace T. Hallock, formerly Associate Director, Division of Publications, American Child Health Association, and C. E. Turner, Associate Professor of Biology and Public Health, Massachusetts Institute of Technology. New York: Metropolitan Life Insurance Company,* 1926.

The most recent of the "Welfare Publications" of the Metropolitan Life Insurance Co. is a series of four stories of the lives and work of men who occupy outstanding positions in the history of public health. These booklets are in the same size and style of the many others that have preceded them and are prepared with the same painstaking care and attention to detail. They differ somewhat in their purpose, however, since they are planned primarily as textbooks for junior high school use. The excellence of the booklets and the success of the plan is well indicated by the fact that the demand from teachers far exceeds the available supply.

Louis Pasteur, the first of these books to appear, is the best, perhaps because of Pasteur's intensely dramatic life and work. This booklet is fortunately long enough to allow a detailed account of the well known anthrax vaccine experiment with the 50 sheep. The studies and ultimate conquest of rabies are also described in a most fascinating way. Since this story deals more than the others with laboratory work and technical subjects the use of unfamiliar words has to be frequent. There are cases in which the child of 12 to 15 years might easily be confused by unfamiliar words—"rabid," "trepanning," "immune," etc. A glossary of technical terms would not be out of place.

Edward Livingston Trudeau is the second hero on the list. In this booklet, as in all the others, the point of view of the child is constantly kept in mind. Events in the youth of the hero are used as a preface to an account of the work of his later life. A graphic description is given of Trudeau's own case of tuberculosis, of his removal to the Adirondacks and of the founding of the great sanitarium. There may be cause to feel that this booklet suggests that Trudeau solved the tuberculosis problem. One is rather led to believe the one, only, and sure cure for tuberculosis is to move to Saranac Lake. A final paragraph, "How to conquer the Great White Plague," would remedy this fault.

The story of *Edward Jenner* is well told and appropriately illustrated. A double page old style map of the world purporting to show the means of the spread of smallpox is not very convincing, however. In view of the present increase of smallpox and what seems to be a growing opposition to vaccination some material on the dangers of the anti-vaccinationist and the Christian Science attitude would be justifiable propaganda.

Walter Reed and a detailed account of his study of the transmission of yellow fever is the last of these works, just issued. The analogy of chasing down a criminal is carried through the story in a clever manner. This excellent example of a line of logical reasoning should be of value to students—old or young.

The appeal to youth has perhaps been carried too far by putting on the covers of these booklets unfamiliar pictures of the heroes when they were young men. This applies particularly to Pasteur and Reed. In other ways also the design of the covers is not as pleasing as might be desired. The suggestion is of something old fashioned and not at all of the live stories within.

These four little books, ranging from 24 to 32 pages, are the best combination of public health information attached to fascinating stories that has appeared for some time. They should do much to answer the popular question, "What is this health work all about, anyway?"

JOHN HALL

Hydrogen Ion Concentration of the Blood in Health and in Disease—*By J. Harold Austin, Professor of Research Medicine, University of Pennsylvania, and Glenn E. Cullen, Professor of Biochemistry, Vanderbilt University. Baltimore: Medical Monographs, Williams & Wilkins,* 1926. 75 pp. Price, $2.00.

This is the eighth of a series of monographs on medical subjects published by the Williams & Wilkins Company. The purpose given is, "To bring together the most important facts in a concise form for the use of clinicians and workers in clinical laboratories." The facts have not only been compiled from over 200 listed references, but the authors' own researches have furnished a background for the whole. The work is illustrated by 8 charts. An introductory chapter furnishes certain general considerations necessary to an understanding of the subsequent chapters. Several pages are taken up with normal pH values, and then the bulk of the space is devoted to the pH of plasma in conditions such as diabetes, fasting, anaphylactic shock, hemorrhage, lobar pneumonia, and others. The final chapter is devoted to methods of determining pH values of body fluids.

The work is clearly and concisely presented. The brief compilation of widely scattered facts furnishes a very convenient tool for the clinician, although the volume is far from being an exhaustive treatise. Purely theoretical discussions having been virtually ruled out as being beyond the defined purpose of the book, the reader must consult the original articles for the more intricate theory. However, one cannot help but wish for the authors' opinions concerning the possibilities of the rôle of hydrogen ion concentration on various physiologic and immunologic functions. The volume covers its intended field ably. Its adherence to statements of fact alone shows commendable restraint, and its disbarment of theoretical considerations gives rise to curiosity and speculation on the part of the reviewer rather than criticism.

M. S. MARSHALL

Parasitic Protozoa of Man—*By Charles F. Craig, M.D., Lt.-Col., Medical Corps, U. S. Army, D.S.M. Philadelphia and London: Lippincott,* 1926. 569 pp. Price, $7.00.

Every person interested in the parasitic protozoa of man from a medical or diagnostic standpoint will find Colonel Craig's book a valuable addition to his shelves. The material offered represents the results of many years of study by a laboratory worker and teacher, and in presentation is written especially for those wishing to make practical use of the information.

The book is very complete, and includes a description of parasites of lower animals closely related to those of man. The parasitic amoebae, flagellates, sporozoa and ciliates are classified, described, and discussed from the standpoints of their relationship to man and to lower animals.

A discussion of the Spirochaetes, Rickettsia and other organisms classed in the Chlamydozoa is intentionally omitted, since the author points out that classification of these organisms—whether as protozoa or bacteria—is at present a matter of personal opinion.

Each chapter is followed by a list of references which are classified, and at the close of

the book there is a technical appendix containing practical directions for culturing and staining of protozoa.

As might have been expected, the section on the malarial parasites is full and authoritative. The discovery and treatment of carriers receive attention, and there is an excellent section on prevention. The shortcomings of quinine prophylaxis, as ordinarily employed, are pointed out. The author considers that the sulphate, tannate and quinine alkaloid are the only preparations worthy of consideration for this purpose, and of these he seems to prefer the sulphate for general use. We are warned of the especial difficulty of killing gametes with quinine, and of the importance of control by microscopic examination. Screening and sterilization of carriers by quinine furnished almost absolute protection during the World War. Anti-mosquito measures alone were more successful than quinine prophylaxis alone, the former giving 75 per cent protection against 35 per cent for the latter, while the conjoint use of both resulted in 94 per cent protection for the men, and 97 per cent protection for officers.

The make-up of the book is excellent and the illustrations are abundant and carefully selected, many of them having been made from microphotographs. It will serve both as a laboratory guide and text for medical workers. The author is to be congratulated on his production.

M. P. RAVENEL

Ears and the Man—*Studies in Social Work for the Deafened—By Annetta W. Peck, Estelle E. Samuelson, and Ann Lehman, of the New York League for the Hard of Hearing. Introduction by Wendell C. Phillips, M.D. Philadelphia: F. A. Davis Co.*, 1926. 217 pp. Price, $2.00.

This book is not the usual opinion of the professional otologist studying cases, but is written by three women, all of whom are somewhat deafened. It is, therefore, the experience and opinion of individuals who know the difficulties of those who are so handicapped.

To some the tragedy of deafness is so great that there is never a marked degree of rehabilitation. Sometimes this is due to disease and sometimes to environment. The unpardonable tendency of those who hear well to consider the deafened people as in the class of those "not all there" makes their situation more difficult.

Stress is laid upon the difference between the deaf and the deafened or hard of hearing, which is as great as that between those who need to wear glasses and those who are permanently blind. Reconstruction may come to the deafened through lip-reading, through guidance in choosing a vocation fitted to dulled ears, or through obtaining a job where growth is possible and service to others precludes the handicap becoming the all important thought in mind. Lip-reading, though started in private schools has found its way into public evening schools. In 1925 there were 25 cities in the United States conducting free evening classes in lip-reading as a part of their school systems.

The New York City League for the Hard of Hearing has conducted its own medical and educational clinic for the Prevention of Deafness in Children since 1922. Many cases are cited in the book showing the change of outlook in those whose lives might have been very tragic, but who found improvement or compensation through the help of the League.

Several pages are given to the harm done by quacks who by their work prevent real rehabilitation. Many devices to help the hearing are reviewed.

The conclusion is that research on the cause of deafness is so limited that otologists can get little light on the problem as yet. But the great work must be the prevention of deafness, which in many cases is possible.

A. J.

The Clinical Interpretation of the Wassermann Reaction—*By Robert A. Kilduffe. Philadelphia: Lea & Febiger*, 1926. 203 pp. Price, $2.50.

In this little volume are discussed the principles and clinical interpretation of the Wassermann test. The author is an outspoken disciple of the Kolmer-Wassermann technic and the interpretation is presented from that point of view.

A commendable feature of this volume is the author's emphasis that a positive Wassermann reaction is but a single manifestation of syphilis to be interpreted only in the light of other manifestations of this disease. A negative Wassermann does not exclude syphilis and a positive one is obtained in rare instances in non-syphilitic conditions. The final word as to the presence or absence of syphilis is, therefore, with the clinician and not with the laboratory worker. This point of view is accepted by most public health workers with reference to all laboratory diagnosis—a positive laboratory finding must be considered in connection with the clinical findings.

The author is openly impatient with precipitation procedures. "The Kahn test," he states, "has been widely exploited," and infers that it is not worth looking into, in spite of the fact that he makes no claims of having had experience with this test. In this connection, the author quotes from the 1918 Report of the British Medical Research Council, apparently ignoring the fact that the 1923 report of this Council concludes, "We believe some form of flocculation test will take the place of the W.R. in the near future." C. C. YOUNG

Rats and How to Destroy Them—*By Mark Hovell, F.R.C.S. London: John Bale, Sons & Danielson, Ltd.* 453 pp.

The book opens with an exceedingly interesting discussion on the habits of rats and in the first chapter evidence is presented to show the necessity of constantly waging war against these rodents in order that they can be exterminated or even reduced in numbers. The rat is amazingly prolific, which makes a rat-extermination campaign all the more difficult of accomplishment.

Methods and schemes such as trapping, snaring, ferreting, poisoning, blocking, flooding and others are discussed in considerable detail.

The author also considers in several chapters plans and methods of combating this pest in various locations about an estate, on ships and in sewers.

This volume is concisely summarized making it unnecessary to read the entire book to obtain information on any eradicative or preventive work in connection with rats.

ARTHUR P. MILLER

Venereal Disease Manual for Social and Corrective Agencies—*Published by the U. S. Public Health Service, Division of Venereal Diseases, as V.D. Bulletin No. 81. Washington, D. C.* 67 pp. Price, $.50.

This manual states that it contains information for courts and probation officers, social workers, nurses, visiting teachers, policemen and policewomen, jailers and wardens, and superintendents and matrons of homes for dependent, delinquent and defective classes. This surely is a formidable list to try and reach effectively in a small manual. Needless to say it has been done.

The subject has been handled clearly and the material is presented in a crystallized and popular way. The wide embrace is shown by the titles of some of the chapters which are as follows: Venereal Diseases and the Community, Syphilis, Chancroid, Gonorrhea, Vulvovaginitis, Examination and Control of Venereal Disease Cases, Sex Education and the Venereal Diseases, Legal Aspects of Venereal-Disease Control, Sex Morality and the Law, Juvenile Criminality, Aids in Conditioning Behavior.

In addition there is a glossary and two appendices, giving an outline of the activities of the Division of Venereal Diseases and the educational facilities useful in venereal disease control prepared by the U. S. Public Health Service. The manual is authoritative and interesting, and should be available to all the officials for whom it was prepared. Copies may be obtained from the Government Printing Office, Washington, D. C. ALBERT PFEIFFER

Report of the Health Section of the World Federation of Education Associations, Edinburgh, Scotland, July, 1925—*New York: American Child Health Association and Metropolitan Life Insurance Co.*, 1926. 158 pp. Price, $.50.

Health education specialists who were not able to attend the Edinburgh conference will find the important addresses and discussions comprehensively reported in this volume. A glance at the contents might lead one to believe that the book is only for educators. Primarily it is, but many topics discussed under the subject of health education will interest the public health worker, for several phases of a general public health program in countries that have adopted definite programs are included.

The first section of the report deals with "The Present Status of Health Programs Throughout the World" with contributions from England, Scotland, America, Japan, France, Belgium, Austria, Germany, Hawaii, and Panama. Sir W. Leslie MacKenzie and Dr. James Kerr were two outstanding figures in the presentation of the conference program.

The other sections of the report deal with "Some Special School Health Problems," "Training Leaders in Health Education," and "Private Organizations and Their Place in a School Health Program."

To the persons interested in keeping abreast of the international health education movement the report, edited by the Health Education Division of the American Child Health Association, is the most authoritative collection of information recently published. A. B. T.

HEALTH DEPARTMENT REPORTS

IRA V. HISCOCK

Conference of State and Provincial Health Authorities of North America—Transactions of the 23d Annual Conference of State and Provincial Health Authorities of North America with the U. S. Public Health Service have been published in *P. H. Bulletin 161*, 1926. The report contains a brief review by the Surgeon General of outstanding activities of the U. S. Public Health Service during the year, followed by several valuable papers and discussions which deal with problems of universal interest to health administrators.

A plan is outlined for the establishment of a morbidity registration area. The need for more complete and up-to-date information concerning morbidity is generally recognized and it is encouraging to observe that this important group of health officials is again taking an active interest in the problem. A report was also presented of the occurrence of plague in the United States and control measures taken by city, state and federal authorities.

Consideration was given to means of securing "The Unification of Milk Control in the United States." In view of the difficulty in attaining a national unification of milk control through federal or state law, it was suggested that the proper channel through which voluntary unification might be brought about is the annual Conference of State and Provincial Health Authorities. Plans were considered for the creation of a committee on milk control with consultants from federal bureaus to study the problem.

The practicability and desirability of utilizing the services of advanced and selected medical students during the summer months in the field of public health was suggested. "The most urgent need at present for personnel is for well-trained medical health officers and public health nurses. Special schools for supplying the essential training have been established, but the enrollment of students has not kept pace with the growth of health work and the attendant need for trained personnel." Relative to service by medical students in health departments, it is stated, "Having acquired a knowledge of the wide range of opportunities for employment, of the growing attractiveness of the conditions of service, of the improvement in compensation, and of the almost untouched possibilities for creative work, they will be favorably influenced, and will transmit to their associates in the medical schools and hospitals something of their experiences and views. Some of them will shape the remainder of their professional training for this field."

Red Cross Activities—The Second Pan-American Red Cross Conference held in Washington May 25–June 5, 1926, was the occasion for several interesting reports which show that the Red Cross continues to be active in health affairs in various parts of the world.

The work of the American Red Cross is administered from Washington with one branch office in St. Louis, Mo., and one in San Francisco, Calif. There are now approximately 3,500 chapters in this country. The Junior Red Cross had an enrollment in January of this year of 5,412,000 young people.

Although the American Red Cross conducts no training schools for the preparation of nurses it has an enrollment of 42,734 graduate nurses. On December 1, 1925, 836 nurses were serving in the public health nursing field directly under chapters or in affiliated services, while 766 were teaching the course in home hygiene and care of the sick. The Red Cross nurse may be found in Albania, the Philippines, Hawaii, Haiti, Constantinople, Colon and China.

Nutrition work has also been undertaken and there are 2,800 Red Cross dietitians enrolled. During the first 6 months of 1925, 92,643 children and 2,384 adults were instructed in nutrition problems. The national organization also assists in approximately 100 disasters each year and about 90 others are assisted by the individual chapters. In 1925, over $3,000,000 were spent for relief work. Two other important features of the program are the first aid instruction given to enable men and women to meet emergencies and the life saving service to eliminate the preventable loss of life caused by drowning.

The Canadian Red Cross Society has developed a 7-fold service. Help and comfort for sick and disabled ex-service men is considered the first duty; in the Junior Red Cross, more than 100,000 school children in over 4,000 classrooms are banded together to play the health game; public health nurses carry on an important part of the nation's health service; nursing outposts have been established to reach

families widely separated on the frontiers of pioneer settlements; classes in home nursing have reached over 8,000 women; seaport nurseries have been organized to extend a welcome and give beneficial care to mothers and children upon landing; and health education is promoted through special publications.

Reports of the Costa Rican Red Cross show that health activities have included a model housing development, the cost of each house, according to plans, not to exceed 1,800 colons. The Brazilian Red Cross was founded in 1908. The Women's Section, founded in 1914, holds a course of lectures for "voluntary nurses," designed for women and girls who wish to prepare themselves to render help to the sick. A professional school for nurses has been maintained for nearly 10 years. The Medico-Chirurgical Institute, to which the nursing school has been annexed, is divided into two sections—the polyclinic and the hospital where various types of services of a medical and nursing character are rendered.

The report of the Secretariat of the League of Red Cross Societies, at the Second Pan-American Red Cross Conference embraces a wide range of activities. Part III deals with the health program and considers problems of coöperation with existing organizations, of health propaganda, child welfare, tuberculosis, venereal diseases, cancer, alcoholism, eugenics, mental hygiene, and town planning. Part IV is devoted to the training and functions of nurses, "it being generally recognized that the raising of educational standards is of supreme importance in preparing nurses for the work entrusted to them."

Milwaukee, Wis.—Milwaukee's 1925 health department report has been published in brief in the Health Bulletin of January and February of this year. A general death rate of 10.6 and an infant mortality rate of 77 were recorded. It is noted that the virulent smallpox epidemic of the year contributed 87 deaths. Among the new activities of the year it is observed that the Johnstone Emergency Hospital was placed under the direction of the health commissioner "in order that treatment and prevention might be properly coördinated and developed." A goiter prevention campaign, in coöperation with the two local medical societies, was launched. Free stations for toxin-antitoxin immunization were established in addition to the facilities for this work in the schools. Child welfare clinics extended their work to all children of preschool age instead of limiting this provision to those under two years of age. Several new health ordinances were adopted. The per capita cost for preventive health work for the year was 71 cents. The inclusion of the emergency hospital and of the isolation hospital raises the total cost to $1.04 per capita.

The nurses of the Health Department register every child born, and attempt to follow each child from babyhood to high school age. The nurses made 27,706 calls in the furtherance of child welfare work. In addition to this, 9,480 calls were made on newly registered babies. During the year the nurses of the department made 14,624 visits to the schools of the city, and a total of 311,370 inspections of children at the schools, for contagious diseases. The School Hygiene Division, with its 23 part time school physicians, supervised the health of 167 schools, with an enrollment of 108,546 pupils. There were 50,168 physical examinations made of pupils in the various schools; 42,677 physical defects were found, and 2,256 pupils were excluded by school physicians for contagious disease. In addition to this, 13,035 examinations were made at the Vocational School for labor permits.

Newport, R. I.—One of the interesting reports of a small city is that of Newport for 1925. This report occupies 32 pages, is bound in light brown covers (the front cover bearing the city seal), is printed in readable type, and gives a concise picture of health work during the past year. Nineteen regular and 16 special meetings were held by the Board of Health which consists of 5 members.

It is always satisfactory to find a statement of population early in a health department report, and such a statement indicates an estimated population of 29,424. There were 504 births and 324 deaths during the year. A general mortality rate of 11.0 per 1,000 population was recorded. The principal causes of death were organic heart disease (69), cerebral hemorrhage (39), Bright's disease and diabetes (37), pneumonia (26), pulmonary tuberculosis (20), and cancer (18). During the year there were 23 deaths of children under one year of age, giving an infant mortality rate of 45.6 per 1,000 births—a creditable record. The total expenditures for the year amounted to $42,483, approximately half of which were for garbage and refuse disposal.

The president concludes his report with the following significant statements: "The service

of the public health has been greatly strengthened in scope and usefulness during the last decade. The work of a public health officer has gained recognition as a new profession. Today, no progressive community can afford to employ as health officer, a man who has not had adequate preparation for his duties, either from his medical training or from such a special study of public health methods."

Australia—A most interesting health report for 1925 has been published by the Royal Commission on Health of Australia. This contains 118 pages, 13" x 8" in size, printed in large type suitable for the size of page, and illustrated with tables and graphs. A well arranged table of contents enables one to refer promptly to any special feature of the report. Each section concludes with a carefully prepared list of recommendations.

One of the problems discussed is of special interest to statisticians, for it is stated that standardized statistical investigations into the extent and character of morbidity in the Commonwealth should be instituted and maintained. It is recommended that definite and formal coöperation should be established between the statistician and the health department by associating a medical officer of the Department of Health with the Commonwealth Statistician's office to supervise the collection, tabulation, and analysis of morbidity, mortality, and other vital statistics. The need for one "who really appreciates the value of causative influences" is emphasized.

The report deals in detail with the various functions of a health organization, and in addition, includes sections on the encouragement and development of research work, the relationships which should exist between public health authorities and medical practitioners, the relationship which should exist between public health authorities and other public authorities rendering medical services, and the publication of information relating to matters concerning public health. It is urged that a division of publicity and health education be established, that an annual report be published, and that subsidies and other forms of assistance be given to the states in furtherance of their health publicity activities. In conclusion it is stated, "In efforts to prevent disease it is almost an axiom that voluntary coöperation between individuals and the administration is more effective than attempts at compulsion, especially when the individuals have an intelligent comprehension of what is necessary. . . . One means of education is a model health administration in full operation."

Problems of communicable disease control, and of maternal and infant hygiene are considered in detail and constructive suggestions are made for improvement of conditions. In connection with the Maternity Allowance Act it is interesting to note a recommendation to provide that the application for the allowance shall be made at least 5 months before the date of the expected childbirth and that the allowance be not paid unless a medical certificate be produced to the effect that the mother has had prenatal supervision. Also, "Conditional subsidies should be granted by the Commonwealth to assist in the education of medical students and nurses in obstetrics in accordance with conditions approved by the Commonwealth Department of Health."

Territory of Hawaii—The report of the Registrar General for the Territory of Hawaii for the year 1925, contain 129 pages of statistical data of primary interest to vital statisticians. This report contains 42 tables in all and is worthy of careful study.

The estimated population at the mid-year period 1925 was 223,645, of whom 128,068 were Japanese, 49,335 Filipino, 35,880 American, British, German and Russian, 27,470 Portuguese, and 24,851 Chinese. The population has steadily increased since 1890 when according to the census there were 89,990 people in the Territory.

A birth rate of 41.57 and a crude death rate of 12.74 are recorded for the year. The death rate among the 21,208 Hawaiians amounted to 33.67 per thousand population.

There were 13,109 births during the year with 1,358 deaths among children under one year of age.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

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AYCOCK, W. L. The Epidemiology of Poliomyelitis. *Jour. A. M. A.*, 87:2 (July 10), 1926.

A study suggesting that infection from paralytic cases occurs not infrequently, but by routes other than direct contact; a recent outbreak points to milk.

BURKE, V., and BARNES, LAV. Typhoid Vaccination by Mouth. *J. Inf. Dis.*, 39:1 (July), 1926.

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FLINN, F. B. The So-Called Action of Sodium Phosphate in Delaying the Onset of Fatigue. *Pub. Health Rep.*, 41:29 (July 16), 1926.

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STUDIES OF THE KAHN PRECIPITATION TEST. (Michigan Department of Health Reprint Series.) By C. C. Young, R. L. Kahn, Pearl L. Kendrick, Harther L. Keim, W. W. Duemling, M. K. Lowe, H. G. Dunham and Dora Jenks, with statement by R. M. Olin. Distributed by Michigan Department of Health, Lansing, Mich., 1925. 120 pp.

PUBLIC HEALTH NOTES

Shoe Dye Regulation—Due to the increasing number of cases of shoe dye poisoning the Chicago Health Department with the coöperation of the shoe dye industry has promulgated an order that after March 1, 1927, leather dyes containing toxic solvents will not be permitted to be sold within the city of Chicago. After that date also, all leather dyes sold or used must be labeled thus:

"CAUTION: Shoes that have been dyed must be permitted to stand in the open (not wrapped up) for not less than 72 hours after drying, before being worn, in order to avoid poisonous effects to the wearer. This dye must not be used on canvas, satin or other shoes manufactured from fabrics.

"Under no circumstances should shoes or the edges of the soles of the shoes be dyed while on the feet."

Any person, firm or corporation who fails to comply with this regulation will be prosecuted or the dye materials confiscated or destroyed, or both. This is purely a public health measure, and placards bearing this caution will be posted in every shoe store, shoe repair shop, shoe shining parlor or any place where shoes are dyed.

Practically all leather dyes on the market contain either anilin oil or nitrobenzene, both of which are poisonous.

Symposium on Cancer Control—The American Society for the Control of Cancer has completed its final arrangements for the International Symposium on Cancer Control to be held at Lake Mohonk, N. Y., September 20-24. The purpose of the symposium is to formulate in concise language the fundamental groundwork of fact and opinion upon which the collective effort now being made in the United States for the control of cancer should be continued and extended. Sessions will be given over to the discussion of the most useful things that can be done for the prevention, diagnosis, cure and relief of suffering from cancer, and the best ways of making these facts known to the medical profession and the layman.

Eminent surgeons, radiologists and research workers of England, France, Switzerland, Belgium and Holland will contribute to the program and to the round table discussions.

European countries will be represented by the following eminent cancer specialists:

England:

Sir John Bland-Sutton, President, Royal College of Surgeons. "The Value of Co-ordinated Effort among Surgeons, Pathologists and Others in the Control of Cancer."

Dr. W. Sampson Handley, Honorary Surgeon, Middlesex Hospital. "The Earliest Diagnostic Signs of Cancer Visible to the Patient, to the General Practitioner of Medicine, and Detectable by Investigation at Clinics and Hospitals."

Dr. Archibald Leitch, Director, Research Institute of the Cancer Hospital, London. "The Practical Value of Researches into the Contributory Causes of Cancer."

Dr. James A. Murray, Director, Imperial Cancer Research Fund. "Some Notable Contributions to the Knowledge of Cancer Which Have Been Developed Through Research."

France:

Dr. Léon Bérard, Professor of Surgery, University of Lyons. "The Organization and Practical Working of the Centers Against Cancer in France."

Dr. Henri Hartmann, Professor of Surgery, University of Paris. "The Objects and Methods of the Organized Movement Against Cancer in France."

Professor T. Marie, Director, Anti-cancer Center of Toulouse. "The Need of Special Institutes for the Investigation and Treatment of Cancer, as Compared with Other Methods of Dealing with Cancer Patients."

Dr. Claude Regaud, Director, Pasteur Laboratory of the Radium Institute, Paris. "The Value and Proper Equipment of Institutions for the Treatment of Cancer by Radium and X-rays."

Professor Gustav Roussy, Director, Laboratory of Pathologic Anatomy, University of Paris. "The Relation of Research to Prevention and Treatment."

Germany:

Dr. R. Bierich, Director, Institute of Cancer Research in Hamburg. "The Organized Movement for Cancer Control in Germany."

Switzerland:

Dr. Charles DuBois, President, Swiss National League for the Control of Cancer. "The Campaign Against Cancer in Switzerland."

Belgium:

Professor J. Maisin, Director, Cancer Institute of the University of Louvain. "The Organized Movement for the Control of Cancer in Belgium."

Holland:

Professor H. T. Deelman, Director, Institute of Pathology of the University of Groningen. "The Relative Mortality from Cancer among People of Different Races."

Professor William M. deVries, President, Netherlands Cancer Institute. "The Prevalence of Cancer as Revealed by Mortality Returns and at Autopsy."

County and City Establish Free Immunization Stations—The Hennepin County Medical Society and the Division of Public Health of Minneapolis, Minn., by a coöperative plan have established four free stations in Minneapolis where prophylactic inoculations against diphtheria and scarlet fever are administered free to children between the ages of one and sixteen years.

The expense of this service is borne by the city health department and the physicians are furnished by the Hennepin County Medical Society. This procedure was unanimously adopted following a discussion by the physicians of the city at the largest meeting of the County Medical Society held during the year. The newspapers and the clergy have given the project publicity. The Larson Castor-oil soap toxin is being used.

Tuberculosis Specialists Meet in Washington—From September 30 to October 7, the Fifth Conference of the International Union against Tuberculosis will meet in Washington and will be followed by the Twenty-second Annual Meeting of the National Tuberculosis Association, which itself will assume an international character.

In the early formative years of the National Tuberculosis Association, the International Congress of 1908 played a most significant part. In fact, it is an outstanding mile post. The hospital and sanatorium program of the association was very largely shaped by the discussions at that Congress. Much of the educational work of that early day was stimulated and moulded by the exhibits and other educational propaganda brought out in the Congress, and for many years the results of the International Congress of 1908 played a most important part in the entire development of the National Tuberculosis Association's work.

Prominent men and women, experts in every phase of tuberculosis, pathological, clinical and sociological, will be here from France, England, Germany, Italy, Norway, Denmark, Sweden and elsewhere to attend the meetings of the Union and the National Tuberculosis Association. The newer knowledge of the laboratory, the clinical and the social field will be discussed by these and other experts. The preliminary program of the Twenty-second Annual Meeting of the National Tuberculosis Association has already been published in the June number of the Bulletin of that Association. The program is divided into four main sections, Clinical, Pathological, Nursing and Sociological, and each of these sections will hold a number of sessions. A review of the program shows that in practically every session some prominent foreign physician will present a paper and with the usual high type of papers presented by the Americans, it seems quite likely that this coming meeting will be one of the most important and interesting of any in the history of the National Tuberculosis Association. This meeting will give an opportunity for considering various scientific problems relating to the whole field of tuberculosis and for evaluating methods and technic.

The International Union against Tuberculosis which holds its meeting prior to that of the National Association, has limited its program to the discussion of three specific topics, as follows: "The Part Played by Contagion in Tuberculosis among Adults," "The Anatomic Structure of Tubercle from Histogenesis to Cavity" and "Tuberculosis and Milk." These subjects should provoke interesting and important discussions.

LABORATORY

C. C. Young

THE COMPLEMENT FIXATION TEST IN TUBERCULOSIS A REVIEW

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IT IS impossible in a brief résumé of the subject to do more than outline the development of the complement fixation reaction for tuberculosis and indicate the limitations of the test.

The principle of the reaction was discovered by Bordet and Gengou[1] and first applied by them to the detection of specific sensitizers in the blood serums of animals infected or immunized with tubercle bacilli.

Such specific sensitizers were first detected in human serums of tuberculous subjects with this reaction by Widal and LeSourd[2] and Camus and Pagniez[3] who used suspensions of tubercle bacilli as antigen.

Several years later Wassermann[4] applied the method to the detection of specific sensitizers in the serums of syphilitic individuals, using extracts of syphilitic organs as antigen. He apparently conceived the idea of applying the test to syphilis as a result of his earlier work on the complement fixation reaction in tuberculous and tuberculinized individuals in which he used tuberculin as antigen. The rapid strides made in the practical applications of the Wassermann reaction in syphilis gave added impetus to the development of the complement fixation test in tuberculosis. The results at first obtained with the use of suspensions of tubercle bacilli and tuberculin as antigen were very discouraging. Serums from a large percentage of undoubtedly tuberculous individuals did not react and many from non-tuberculous subjects gave a considerable degree of fixation.

This was attributed to the lack of specificity of the antigens or to their contamination with non-specific material. As a result, a large variety of antigens were prepared and tested for their specific function. Each individual worker modified his antigen in some manner. Suspensions of tubercle bacilli were prepared in different ways. Extracts of the organisms with aqueous and lipoid solvents and extracts of tuberculous organs corresponding to the antigen used by Wassermann in the complement fixation test for syphilis were made. In addition, special media and methods of cultivation of tubercle bacilli were devised with the hope of exalting the specific character of the antigen. A number of workers reported excellent results, and with apparently widely different types of antigens.

EXPERIMENTS WITH TUBERCLE BACILLI

In 1914 Besredka[5] prepared an antigen from an alkaline egg broth culture of tubercle bacilli. His results indicated that nearly all cases of active tuberculosis reacted and that the failures occurred principally in the far advanced or terminal stages of the disease. The serums from non-tuberculous cases did not react. Miller and Zinsser[6] and Punch,[7] using saline suspensions of live tubercle bacilli, reported specific fixation with practically 100 per cent tuberculous serums. VonWedel,[8] Cooke,[9] and Wang and Crocket[10] reported similar results with suspensions of partially defatted tubercle bacilli. Craig[11] obtained equally excellent results with an alcoholic extract of tubercle bacilli. Dudgeon,[12] Meek,[13] and Aronson and Lewis[14] obtained less encouraging results with similar alcoholic extracts. Calmette and Massol[15] used three different antigens, all watery extracts of tubercle bacilli which were supposed to represent exobacillary and endobacillary substances of the organisms. They reported over 90 per cent fixation with tuberculous serums. Petroff[16] also used a combination of antigens: a filtrate from a potato broth culture of tubercle bacilli, an NaOH extract, and a methyl alcohol extract of the organisms. He has more recently added a glycerin extract of tubercle bacilli previously treated with toluol. He reports reactions with 85 per cent of clinically active tuberculosis, 64 per cent with cases clinically inactive, and 63 per cent with incipient cases.

Wassermann[17] prepared an antigen by sensitizing with lecithin tubercle bacilli which had previously been defatted by extraction with tetraline. He reported 100 per cent fixation with this antigen in cases of active tuberculosis and no fixation in inactive tuberculosis.

Unfortunately, most of these antigens gave much less encouraging results in the hands of other workers. The results of Besredka, however, have been repeatedly confirmed and extended and now certainly appear to possess practical significance.

COMPARISON OF TECHNIC

It would seem at first sight that the antigen of Besredka possessed a specificity lacking in the other antigens. An important difference existed, however, irrespective of the antigen, between the work of Besredka and that of most of the other investigators which did not receive the attention it deserved. This was the difference in the technic employed.

Calmette,[18] in 1909, realized that the reaction between tuberculous antigen and antiserum was much more delicate than that between syphilitic antigen and antibody. He made certain observations which indicated that a quantitative relation existed between the tuberculous antigen, antibody and complement, and further that the amount of complement fixed by this complex was as a rule considerably less than that fixed in the Wassermann reaction for syphilis. For these reasons he used various increasing doses of complement in his test, beginning with one unit. In order to determine the specific fixation with a single unit of complement he used single antigen and serum controls with each quantity of complement. In such a reaction the total specific fixation of complement is shown by direct comparison with the non-specific fixation occurring in the controls. In the usual forms of the Wassermann reaction which were employed by most of the other workers, the degree of specific fixation of complement could not be determined in partially reacting serums because of the lack of control of the non-specific reaction and the presence of too great an excess of complement.

The original work of Besredka was carried out with a technic similar to that of Calmette and Massol and it or some modification of it has been used in practically all of the subsequent work with this antigen. On the other hand, subsequent work with the antigens of most of the other investigators was carried out not only with a less carefully adjusted technic but with such widely varying modifications that no direct comparison could be made in many instances between the original results and those reported later.

Recently, Nègre and Boquet[19] have developed a totally different antigen from that of Besredka and with the technic of Calmette and Massol have obtained results directly comparable with those of Besredka. Their antigen is a methyl alcohol extract of tubercle bacilli previously extracted with acetone.

Wadsworth, Maltaner, and Maltaner[20] have recently published their results of a study of the complement fixation test for tuberculosis in which they showed that the technic is of paramount importance in the successful performance of the test. They confirmed and extended observations made previously by Meyer[21] as to the association of the antigenic fraction of tubercle bacillus cultures with the acetone insoluble lipoids. The most sensitive antigen, however, was a simple aqueous extract of these organisms, dialyzed to remove anticomplementary and lytic properties. With this antigen and a technic designed to eliminate all non-specific factors and to give a quantitative measure of the specific fixation of complement they obtained results closely comparable to those of Besredka.

COMPARATIVE RESULTS

The value of the test must, of course, ultimately be determined by the clinician and its general application can only follow from a comparison of the clinical and laboratory findings in a large number of tests. A considerable amount of such comparative study has been carried out with the test of Besredka and the results of 10,286 cases taken at random from the literature may be briefly summarized as follows: Of 6,104 non-tuberculous cases suffering from some other disease, only 6 per cent reacted; of 242 healthy individuals, 1.2 per cent reacted; of 384 syphilitics, supposedly free from tuberculosis, 26 per cent reacted; of 1,030 unclassified cases of tuberculosis, 85.8 per cent reacted; of 1,325 cases of pulmonary tuberculosis, 92.6 per cent reacted; of 1,004 cases non-pulmonary tuberculosis, 69.4 per cent reacted; of 68 cases of sero-fibrinous pleurisy, 60.6 per cent reacted; of 100 inactive cases of tuberculosis, 44 per cent reacted; of 29 cases of incipient tuberculosis, 76 per cent were positive.

Only a relatively small number of comparative tests with the antigen and technic of Nègre and Boquet have been found in the literature.

and no adequate comparison of the value of their test with that of Besredka can be made.

Wassermann's complement fixation test for tuberculosis, however, has been shown to be distinctly less specific and less sensitive than that of Besredka. Of 1,824 tests carried out with his antigen and technic, 320 were on non-tuberculous cases suffering from other diseases and 20.3 per cent reacted; of 228 syphilitic cases, 32.9 per cent reacted; of 859 cases of unclassified tuberculosis, 63.7 per cent reacted; of 181 cases of pulmonary tuberculosis, 75.2 per cent reacted; of 182 cases of non-pulmonary tuberculosis, 28 per cent reacted; and of 46 cases regarded as incipient tuberculosis, 80.4 per cent reacted.

The number of cases examined by Wadsworth, Maltaner and Maltaner is too small to be of any statistical value. Their analysis of the results, however, shows that the test compares favorably with that of Besredka. Of the 133 cases of pulmonary tuberculosis tested, 90.5 per cent reacted; 4 non-pulmonary and 2 out of 3 incipient cases also reacted; 5 out of 6 inactive cases did not react; of 403 cases of miscellaneous diseases in which tuberculosis was not suspected, although not excluded, 55 or 13 per cent reacted; 9 of these 55 cases also reacted with the Wassermann antigens in the complement fixation test for syphilis.

SEARCH FOR SPECIFIC ANTIGEN

Although a large part of the experimental work in the development of the complement fixation test for tuberculosis has been devoted to a search for a "specific antigen," the isolation of the specific antigenic fraction has not been of much importance with regard to the practical application of the test. The antigen of Negre and Boquet, which represents more closely than any other this specific fraction, is of no greater value than the widely differing antigens of Besredka, Petroff, or of Wadsworth, Maltaner, and Maltaner. The most significant step in the development of the test came with the realization of the importance of the technic.

Much less complement was found to be fixed in the tuberculosis complement fixation test than in the Wassermann test for syphilis and the technic had, therefore, to be adjusted to detect and measure the actual fixation which occurred. Such a close adjustment of the specific reaction required, of course, more careful control of the non-specific reaction and more careful measurement and adjustment of all the reagents used.

The principles of technic which have been developed, when properly applied, have given and should continue to give consistent results. The general usefulness of the test can be determined by only its wide practical application and the careful correlation of laboratory and clinical findings.

A high percentage of reactions is obtained in all forms of active tuberculosis, the failure in reaction being principally confined to certain types of advanced disease which may be easily diagnosed clinically. The significance of fixation with tuberculous antigens is indeterminate, however, in cases in which the serum reacts also in the complement fixation test for syphilis on account of the possibility of cross fixation.

It may be said from the results of the tests carried out so far that, when a suitable technic is used, the complement fixation test is an important aid in the diagnosis of tuberculosis.

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A MODIFICATION OF BRILLIANT GREEN WHICH INCREASES ITS SELECTIVE ACTION IN BILE

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THE brilliant green at present on the market is much less satisfactory for the isolation of typhoid from feces than that formerly obtainable, owing to a decrease in its selective action. While batches of the dye can be found that are fairly suitable for brilliant green agar, it has been impossible to obtain any recent dye that will serve the purpose in bile.[1] For this reason attempts were made to alter or modify the dye in the hope that its selective action could thereby be increased.

The following treatment has been found to greatly increase the selective action in bile of several different lots of brilliant green: a 5 per cent solution of the dye is made in N/1 hydrochloric acid. This acid solution is then evaporated to a thick paste over a boiling water bath. The evaporated dye is redissolved in distilled water to make a 5 per cent solution and kept for use. When the dye is dissolved in the acid, a color change takes place—yellow or burnt orange—but the final color is again green.

To determine the concentration suitable for the bile the treated dye is titrated over a range from 1:200 to 1:1500, adding a small amount of feces (0.5–1.0 gram) seeded with typhoid, to each bottle of brilliant green bile (15 c.c. to a bottle). A loopful from each bottle is then streaked on three successive days on either Krumwiede's brilliant green agar or brilliant green Endo agar. We prefer the latter, because there is more contrast between lactose and non-lactose fermenting colonies. That concentration of brilliant green is used for the particular batch of bile in question, which gives the greatest inhibition of fecal bacteria, and, at the same time, the greatest yield of typhoid colonies. In our experience the most suitable concentration lies around 1:600, but occasional batches of the acid treated dye have had to be used as low as 1:400 or as high as 1:1500. This titration is absolutely essential to the success of the method. It is advisable, also, as a further check, to test the finished batch of brilliant green bile with several different specimens of feces seeded with typhoid. This medium is satisfactory for blood and urine cultures, as well as feces. Feces containing *B. pyocyaneus* or bacteria of the aerogenes group are unsatisfactory for the titrations because these organisms are not inhibited by brilliant green and will overgrow *B. typhosus*.

The brilliant green agar used for plating must also be carefully titrated. Whether Krumwiede's agar is used or brilliant green Endo agar, the proper concentration of dye is determined for each lot of agar in the usual way. It will probably be found that it is necessary to cover a range from 1:200,000 to 1:750,000 for this titration.

It cannot be emphasized too strongly that the success of the method lies in carefully determining the proper concentration of dye for each new batch of brilliant green, each new batch of bile and each new batch of agar. It is possible with this method to obtain almost pure cultures of typhoid from feces for many days after the preparation of the specimen.

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VITAL STATISTICS

Louis I. Dublin, Ph.D.

Vital **Statistics in Winnipeg, Manitoba, for** 1925—Winnipeg's natural increase in 1925 was 3,202 as against 3,013 in 1924. The birth rate last year was 24.44 per 1,000 population as compared with 23.73 in 1924; the death rate, 7.78 as against 8.30. In 1925 the marriage rate was 11.58 while in 1924 the rate was 11.46. In 1925 there were 1,753 cases of infectious diseases treated in municipal hospitals, with 47 deaths, a percentage of 2.68. Of these diseases scarlet fever headed the list with 474 cases, 7 of which were fatal while smallpox, with 41 cases and no fatalities, had the least number of cases. Diphtheria cases for the city showed a gratifying decrease compared with the record for 1924, 515 cases as against 885, but the deaths numbered 26 as against 22. Unfortunately, whooping cough increased with 689 cases reported, this being one-third more than those reported in 1924. An outbreak of mumps was the unusual feature of the year, the cases on record totaling 436 as against 10 for 1924. In the last 3 months of 1925 reports were entered for 365 cases.—*Winnipeg Tribune*, May 24, 1926, Winnipeg, Man., Canada.

Vital Statistics of France, 1925—The death rate in 1925 was 18.1 per 1,000 population, as compared with 17.3 in 1924. The live birth rates were 19.6 per 1,000 in 1925 and 19.2 in 1924. The marriage rate was 18.0 in 1925 and 18.2 the previous year. For the pre-war year 1913, the death rate was 17.6, the birth rate, 19.1 and the marriage rate, 15.1. In the post-war year 1920, the rates were respectively 17.2, 21.3 and 31.8 per 1,000 population.—*J. de la Soc. de Statistique de Paris*, 67:185, May, 1926.

Primiparous Births in Borough of Manhattan, New York City, in 1925—In the Borough of Manhattan, there were 47,208 births in 1925. Of these, 17,110 or 36 per cent were first births. Of the total number of white births, 37 per cent were first births and of the total number of negro births, 35 per cent were first births. Physicians attended 90 per cent of the total number of first births while midwives attended 10 per cent. In the multipara group, physicians attended 77 per cent of the cases and 23 per cent were delivered by midwives. Of the total number of first births, 96 per cent were legitimate while 4 per cent were illegitimate but of the total number of illegitimate births, 76 per cent were first births. Twenty-eight per cent of the total number of births took place in tenements and private dwellings, while 72 per cent occurred in institutions.—*N. Y. C. Health Dept. Bull.*, 15:101, June 26, 1926.

Tuberculosis in North American Indians—Death rates from tuberculosis in British Columbia have increased with the result that the Canadian Tuberculosis Association has started an investigation. Deaths among the Indians have been registered annually in an increasing percentage of the total deaths from tuberculosis in Indian communities.

North American Indians form 4.4 per cent of the population, contribute 23.9 per cent of the annual tuberculosis deaths and have a death rate of 514 per 100,000 population.

The Association has received coöperation from the Federal Department of Indian Affairs and has made plans to examine the epidemiological factors, the hygienic influences, employment and living conditions of the North American Indian.—R. E. Wodehouse, *Can. Med. Assn. J.*, 16:702, June, 1926.

Obstetric Experience of the Montreal Maternity Hospital—In 1925, the present Montreal Maternity Hospital completed twenty years of service. During that time, 26,137 mothers were delivered—19,987 in indoor service and 6,140 in their own homes. The average maternal mortality was 0.9 per cent. In 1924, the mortality fell to 0.41 per cent; in 1925, to 0.26 per cent. These results compare favorably with returns in several American and Canadian hospitals. In 1925, labor was concluded spontaneously in 1,702, or 90 per cent of the 1,935 cases cared for by the Montreal hospital.

The outstanding features of this twenty years of service may be summarized as follows: avoidance of puerperal infection through an improved technic; antenatal care; increased use of hydrostatic bags; improved methods in the treatment of eclampsia; increasing number of Caesarean sections.—Symposium on Obstetrics—Some End Results. W. W. Chipman, *Can. Med. Assn. J.*, 681–682, June, 1926.

Diabetic Coma and Insulin—During 1920–1921, the two years preceding the discovery of insulin, 113 patients suffering with diabetes were admitted to St. Luke's Hospital in New York. The medical division cared for 101 patients of whom 18, or 18 per cent, died. Diabetic coma caused 12 of these deaths leaving a mortality rate of 12 per cent due directly to diabetic coma. Of 12 patients given surgical care, 4 died, a 33 per cent mortality, though there were no deaths from diabetic coma.

During 1923–1924, two years after the discovery and use of insulin, 163 diabetic patients were treated at the hospital. Medical service was given to 134, 13 died giving a mortality of 9.7 per cent. Only one died of coma, a mortality of 0.7 per cent. The surgical service cared for 29 cases, resulting in 7 deaths—none due to coma.

The use of insulin does not influence ordinary infections which are the most frequent cause of death in diabetic patients. Emphasis should be placed on the prevention of infection rather than the cure.—Lewis F. Frissell and Joseph Hajek, *Jour. A. M. A.*, 86:1903, June 19, 1926.

Tuberculosis in Nova Scotia—During the years 1909 to 1924, deaths from tuberculosis in Nova Scotia dropped from 900 a year to about 650. Of 92,882 deaths from all causes during this period, 10,638, or 11 per cent, were due to tuberculosis. Since that time the percentage has been reduced to 10. The improvement during the years 1909–1924 has been limited almost wholly to the pulmonary form. The central age group (20–49) contributed most of the improvement. It is for this group that the province has made most of the provisions since tuberculosis claims most of those who die at these ages. Under age 20, the results have not been as encouraging.

The general improvement has been more marked in rural communities than in urban and, so far as pulmonary tuberculosis is concerned, with females than with males. In Nova Scotia, pulmonary tuberculosis occurs more frequently among females, while males are affected most by non-pulmonary forms.—*A Statistical Study of Tuberculosis in Nova Scotia*, Dept. of Pub. Health, Nova Scotia, Canada, 1926, 16 pp.

Mortality from Tuberculosis in Norway—Tabulations were made for the mortality from pulmonary tuberculosis in Norway by sex and age. The age groups considered were first year, 2nd, 5th, 6th, 11th and upward to the 80th by 5 year age groups in 5 year periods beginning with 1881–1885 and ending with 1916–1920. Special calculations were made of the returns for age groups 21–25 and 26–30 in the last two periods 1911–1915 and 1916–1920. Estimates for the number of deaths from tuberculosis were made when the cause of death was registered as "unknown."

During the more recent periods 1911–1915 and 1916–1920, the death rates show a decrease especially in the years of childhood. The decline is also distinctly apparent in the more advanced years. In the age group 16 to 30 years the decrease is slight. The figure for boys is highest in the first year of life and on the average slightly higher for the years 2 to 5. From the 6th to the 20th year, girls have nearly double the figure given for boys especially in the age group 11 to 15 years. For men the figures are highest for the ages 21–30 years. For the women, they are highest in the age groups 31–40 and 41–50. In the three oldest 10 year groups the variation is irregular.

Compared separately the results of town and county districts are similar throughout the kingdom. In town the improvement seems to be greater but both town and county show less favorable tendencies in the age groups 16 to 20 and 21 to 30. The number of people in towns in the age group 21–30 years is much greater than in the country due to immigration. Towns receive a large number of persons who are less liable to develop tuberculosis. In the rural districts, on the other hand, there is left a comparatively large number of persons who die of tuberculosis.—Statistical account of the mortality from tuberculosis in Norway. George H. M. Waaler, *Tubercle*, 7:433–437 (June), 1926.

Mental Disease in the United States, 1923—During the years 1880 to 1923 the number of patients in mental disease hospitals in the United States increased from 40,942 to 267,617 or 553.6 per cent. The number of patients per

per 100 of the total population increased from 81.6 to 245. The abnormal increase in the number of patients is partly accounted for by the more general use of hospital care in recent years. The increase appears for each of the three racial groups—white, negroes and Indians. In parts of the country where negro patients are admitted to state hospitals the rates for negroes generally exceed those for the whites. Of the 244,968 resident white patients 69.1 per cent were native, 28.6 per cent foreign born and 2.3 per cent unknown. Of the total white population in 1920, 85.5 per cent were native and 14.5 per cent foreign born. The foreign born had a disproportionate representation in hospitals for mental disease.

Mental disease occurs principally in adult life. Only 0.2 per cent of the resident patients were under 15 years of age. The percentage in the successive quinquennial age groups increased up to the age of 45 and decreased from that age onward.

In reviewing the marital condition of these resident patients the proportion of single was considerably higher for males than for females while the proportions, married and widowed, respectively were considerably lower for males than females.

In distributing the patients in reference to psychosis, the chronic groups predominated among resident patients. Dementia praecox alone comprised 43 per cent of the total while the manic-depressive group comprised 15.3 per cent. The latter disease comprised 28.2 per cent of the readmissions.

Tabulations were made for the patients discharged from hospitals for mental disease in 1922. Those classed as recovered totaled 23.3 per cent, 46.2 per cent improved, 19.1 per cent unimproved, 9.6 per cent as without psychosis and 1.8 per cent as undetermined. The recovery and improvement rates were 12.5 for males and 15.1 for females. The higher rates for females are due principally to the excess of females in the manic-depressive group which yields a higher percentage of recoveries and the excess of males in the general paralysis group which yields practically no recoveries. During 1922, 75.4 per cent of the total recoveries occurred within the first year and 44.3 per cent during the first four months of hospital life.

The death rates per 1,000 patients under treatment was 74.3, 80.1 for males and 67.4 for females. There is a wide range in death rates in the several clinical groups. All the so-called organic group had higher rates while the so-called functional group had comparatively low death rates.—*Patients in Hosps. for Mental Dis.*, 1923 (Prelim. Bull.), Dept. of Com., Washington, D. C., 12 pp., 1926, June 14, 1926.

The Influence of Winter Climate on Pulmonary Tuberculosis in the United States—Views have been expressed that poor ventilation of houses consequent on a severe winter climate is an important factor in the causation of pulmonary tuberculosis. Sweden and England were compared with reference to this question but both countries differ too widely both racially and in environmental factors to convincingly prove the theory.

Mortality statistics for the white population of the United States Registration Area offer unique advantages covering as they do a climatic range from the rigors of winter in Montana to the semi-tropical climate of Florida yet referring to a population fairly alike in racial compositions and highly homogeneous in customs and racial environment. Rural white death rates for 1920 from tuberculosis of the lungs and acute miliary tuberculosis were grouped according to January mean temperature as well as weighted mean death rates for each group. Rural populations were used in the study not only because they are racially more homogeneous than the urban list but because their living conditions are more dependent on climatic factors. California and Colorado are not included in the table since a large number of consumptives who go to these states seeking health would vitiate any comparison.

In studying the states which formed six temperature groups, the mean death rates of the six groups of states showed no such steady decline with increasing January temperature as would support the hypothesis that a severe winter climate or poor ventilation of homes resulting from such a climate is an important factor in the causation of tuberculosis. Instead, states with winter temperatures below 20° and above 40° F. have lower death rates than those with intermediate temperatures, taking mean rates for all the states in the table.

Whether the change in the tuberculosis death rates with changing winter temperature is a true causal relation or due to some other factor, it is evident that it does not explain the difference in tuberculosis rates between Sweden and England, since all Sweden and all England except the southwest have January temperatures well below 40° F.—John Rice Miner, *Am. Rev. Tuberc.*, 13:366–372, Apr., 1926.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C.E.

Malaria Surveys in Porto Rico—No accurate statistics exist of the incidence of malaria in Porto Rico, but it is known to be the most important public health problem next to hookworm disease on the island. Conditions on the island differ with varying climatic factors, and the disease is apparently more abundant in the coastal strip, both on the north and south coasts, and less severe in the elevated interior. Surveys were made in four areas each presenting its problem with regard to drainage, rainfall and temperature. The north coast has abundant rainfall, and drainage is impeded by a barrier beach. Here, in a narrow coastal strip, a thin film malaria index showed 27 per cent positive. On the east coast, in a town of 6,000 people, mosquito breeding occurred in rain-pools in sugar-cane fields, and in irrigating ditches as well as in the swamps near sea-level. Here a parasite rate of 38 was found. In the city of Ponce of 40,000 people at the base of the hills bordering irrigated sugar-cane fields, the rate varied with the location of the houses with reference to the cane-fields, but 26.8 per cent of 686 slides examined was positive. In a station at an elevation of 2,000 feet, the low parasite rate of 6 per cent was found. The important vector of malaria is Anopheles albimanus, although other anopheles are present. It is suggested that as a great deal of malaria occurs on sugar plantations, much might be accomplished in the reduction of the disease by removing the villages of the workers to more healthful locations away from swamps and cane-fields.

(Abstractor's Note: As only thin films were examined, the rate is probably 50 per cent higher than that indicated in the results of the examinations, as this is the usual difference in rates found in the examination of bloods by thin film and by thick film technic.)—Walter C. Earle, *Porto Rico Health Rev.*, 1:12 (Oct.), 1925. Abstracted by W. H. W. Komp.

Water Hyacinth and the Breeding of Anopheles—Water hyacinth, a native of South America, because of its attractive appearance, has been carried to many parts of the world, where it has escaped from cultivation and become a pest. Recent literature shows a conflict of evidence regarding its relation to mosquito breeding. During four years Anopheles surveys were made by the authors in various parts of the south where water hyacinth occurs, and they show that (1) four species of Anopheles breed in water hyacinth; (2) under favorable conditions of temperature breeding will continue in it the year round; (3) the distribution of larvae in water hyacinth is very irregular; (4) Anopheles crucians was present in nearly every collection made in water hyacinth; (5) mosquito breeding in hyacinths went on in the presence of top-feeding minnows. It is also shown that the average production of Anopheles in water hyacinth is only slightly below that of rice fields, which are known to produce large numbers.

Water hyacinth may interfere with the activities of top-feeding minnows, lessen the effect of wave-action, and hinder the application of larvicides, as well as transform bodies of open water into potential Anopheles breeding places. Hence, its spread to waters not infested with it should be prevented. Unless great numbers of Anopheles are produced in it, and sufficient malaria exists in the neighborhood to warrant its removal, the eradication of water hyacinth as a public health measure is not indicated.—M. A. Barber and T. B. Hayne, *Pub. Health Rep.*, 40:2557 (Nov. 20), 1925. Abstracted by W. H. W. Komp.

Sensitivity of Ortho-Tolidine and Starch-Iodide Tests for Free Chlorine—In a comparative analysis of the ortho-tolidine and the starch-iodide tests it is concluded:

(1) The tests are equally sensitive for .005 p.p.m. excess chlorine in a 50 c.c. Nessler tube at room temperature.

(2) Iron in the form of chloride or nitrates in excess of 1 p.p.m. gives a yellow colored solution with ortho-tolidine and interferes with the quantitative determination of free chlorine.

(3) Nitrites above 1 p.p.m. (in terms of N)

give a slight color with ortho-tolidine. This color becomes darker with increasing concentration of nitrites and then finally fades out. Free chlorine oxidizes nitrites to an extent that they do not interfere.

(4) The ortho-tolidine test is not affected by waters having pH between 3 and 8. If water is more basic than pH8, acid should be added to bring it within the pH3 to 8 range.

(5) Oxidized organic compounds have no effect on the ortho-tolidine or the starch-iodide tests.

(6) In the starch-iodide test, small amounts of iron, low concentrations of nitrites and manganese interfere with the reaction.

(7) The most sensitive concentration for the starch-iodide test is that given by 2 c.c. of concentrated HCl in 50 c.c. of water. Higher concentrations give a purple-blue color and lower concentrations a lighter blue.

(8) The starch-iodide test is more sensitive at low temperatures while the ortho-tolidine is less sensitive.

(9) Except for waters with low temperature, the ortho-tolidine test is preferable to the starch-iodide, for quantitative determination of free chlorine, because the ortho-tolidine test requires only one solution that is stable and the test is simple to make and is less affected by interfering substances.

Discussion by Linn H. Enslow:

The discussion brings out additional important data that confirms the conclusions given above. It is concluded that "the ortho-tolidine test under all practical conditions is reliable and in all points superior to the more cumbersome starch-iodide method."—A. M. Buswell and C. S. Boruff, *J. Amer. Water Works Assn.*, 14:384 (Nov.), 1925. Abstracted by H. B. Hommon.

Treatment of Sewage at Manchester—Brief data are given on the operation of the diffused aeration activated sludge units at Withington, and the activated sludge unit and contact beds at Davyhulme. Experiments on de-watering of sludge produced in treatment of tank effluent by the activated sludge process have yielded disappointing results. Preliminary conditioning of sludge derived from treatment of raw screened and detritus-free sewage by the activated sludge process has, however, been more encouraging. The most successful results were obtained by conditioning with alum, a sufficient amount being added to enable employment of maximum rate of filtration, as determined by laboratory tests using a Buchner funnel. Quantities of alum in excess of the amount so determined produced a drier product, but did not materially alter the rate of filtration. Adjustment of pH by acid alone yielded unsatisfactory results, the cake being sticky, leaving the cloth dirty. It was found that when sludge was in good condition leaving aeration plant, economy could be effected in the preliminary conditioning by employing acid with the alum. Trade wastes discharged into the sewers continued to cause difficulty in the operation of the activated sludge plants, greatest disturbance being caused by the presence of oily and tarry matter, which retards the activity of the sludge and results in production of turbid effluents.—Edward Ardern, *Surv.*, 68:465 (Nov. 20), 1925. Abstracted by R. E. Thompson.

Partial Purification of Sewage by Activated Sludge—Brief discussion is made of the method of treatment employed in Birmingham which consists of sedimentation, partial treatment of the tank effluent by the bio-aeration process and final treatment on bacteria beds. It is pointed out that this method takes advantage of the high purification effected in the initial stages of aeration. It was this fact, together with the desirability of employing to the maximum extent a large existing area of substantially constructed bacteria beds, which led to its adoption at Birmingham. Estimated costs are included of installation and operation of schemes for treatment by (1) bacteria beds; (2) bio-aeration; and (3) partial purification by bio-aeration and final treatment on bacteria beds.—H. C. Whitehead, *Surv.*, 68:449 (Nov. 20), 1925. Abstracted by R. E. Thompson.

Problems of Disposal of Sewage and Industrial Waste in California—The writer outlines the nuisances existing in California at present due to wastes from fruit and vegetable canneries; milk and cheese factories; molasses digestion and distillation plants; tanneries; sugar beet factories; slaughter house and reduction works; fish packing plants; gas works; wool scouring plants; paper mills and citrus fruit plants. Sewage treatment plants which have been designed according to European and eastern states experiences have failed to prevent these nuisances in many cases. It is recommended that a bureau be established in

the state government for systematic, scientific, continuous investigation of the various types of industrial wastes peculiar to California, which would make available to every municipality the information on which to base the design of sewage treatment works under the existing local conditions.—C. G. Gillespie, *Western Const. News*, 1:38 (Jan. 25), 1926. Abstracted by I. W. Mendelsohn.

Sewage Disposal in Rural Areas, from an Engineering and Economic Standpoint—This is a brief discussion of the problem of sewage disposal in rural areas, with particular reference to the financial aspects. It is suggested that in cases where long lengths of sewers are required, such as in very scattered areas, the problem could be most economically dealt with by dividing the area into groups of 30–100 houses and providing a treatment works consisting of a tank and an irrigation area, for each group.—W. H. Makepeace, *Surv.*, 68:448 (Nov. 20), 1925. Abstracted by R. E. Thompson.

Modern Methods of Sewage Purification, Precipitation and Filtration—This is an outline and discussion of the development of sewage purification and description of the Hawick works which consist of catchpits, screening apparatus and sedimentation tanks. The sludge is treated with lime and then pressed. The plans were prepared in 1919 and construction of the above section of the works was carried out in 1921 as relief work for unemployment. Percolating filters and humus tanks will be added at a later date.—Thomas Calbert, *Surv.*, 68:219 (Sept. 11), 1925. Abstracted by R. E. Thompson.

Sewage Purification at Glasgow—Brief data on operation during 1924–1925 are given. The average daily quantity of sewage dealt with at the Eastern Works, Dalmarnock, was in excess of 18 m.g. The operating cost per m.g. of sewage treated were: pumping, £1, 1s. 2.8d.; precipitation including chemicals, £2, 7s. 9d.; sludge pressing, 14s. 8.4d. (3s. 8.3d. per ton pressed); sending sludge to sea, 10s. 7.7d.; sending sludge to tips, 4s. 11.4 d.; total, £4, 19s. 3.3d. The disposal of sludge was a real problem during the year, the sale of pressed cake as manure being disappointing, due to continued wet weather. A very considerable tonnage had to be tipped with the house refuse, and the remainder was passed through the sludge main to the Shieldhall works, and thence to sea. As there is only one sludge steamer to serve the Eastern and Western works the latter method of disposal is somewhat restricted. Research on the activated sludge process is being continued, an experimental diffused aeration plant having been installed to obtain data for comparison with results previously secured with the experimental mechanical agitation unit.—W. S. Tennant, *Surv.*, 68:466 (Nov. 20), 1925. Abstracted by R. E. Thompson.

Canal Street Sewage Treatment Plant of New York City—Sewage from an area of 382 acres, comprising the section of Manhattan from Canal to 14th Street and from Broadway to the Hudson is collected at the foot of Canal Street where is located an underground screen chamber and pump room. The three screens are of the Rex, band conveyor type, constructed of finely perforated manganese bronze plate, and move through the screen chamber at 10 feet per minute, each having a capacity of 12 m.g.d. of sewage. Screenings are stored in a tank from which they are ejected through a 6" exhaust pipe into vehicles on the street level, and disposed of at sea. The screened sewage is pumped through a new high level outfall to the Hudson River, chlorination being provided as required by 6 vacuum type liquid chlorine machines. The three pumps are all motor driven as well as the air compressor for operating the ejector. Hot water for cleaning the screens and for heating is provided by a gas fired boiler.—*Amer. City*, 34:53 (Jan.), 1926. Abstracted by J. K. Hoskins.

Methods of Sewage Purification—This article discusses and compares sewage treatment on continuous, percolating type, biological filters and by activated sludge process. There does not appear to be any marked difference in running costs of the 3 activated sludge systems—diffused aeration, Sheffield system of surface aeration and the Simplex system. A series of experiments showed that the practical limit of purification of Shieldhall sewage was attained with 4 hours' contact in compressed air unit and with 8 hours' contact in mechanical agitation unit. Further experiments demonstrated clearly that the biological intensity of activated sludge is greater on compressed air system than on mechanical agitation system. These results have been corroborated by experi-

ence gained at the Shieldhall works with large scale units. It has been demonstrated that provision made in compressed air system for re-aeration or revivification of return sludge is essential to maintenance of intensive form of biological activity in the sludge, and it provides also a reserve of biological energy, which, together with reserve of mechanical energy in form of standby air compressor, confers an elasticity on the process which is unattainable in the mechanical agitation systems.—F. W. Harris, *Surv.*, 68:197 (Sept. 4), 1925; *Contract Record*, 39:926 (Sept. 23), 1925. Abstracted by R. E. Thompson.

Salford Sewage Works Extension—Recently completed extensions, which will render unnecessary the passing of untreated sewage into the Irwell or the Ship Canal are described and illustrated. The works consist of screens, detritus tanks, precipitation tanks, percolating filters and humus tanks. The sludge and detritus are pumped into the corporation steamer for disposal at sea. The works were designed for treatment of d.w.f. of 11 m.g.d.—*Surv.*, 68:379 (Nov. 6), 1925. Abstracted by R. E. Thompson.

Sewage Disposal in Peterborough, Rural District—This is a very brief outline of new treatment works for the parish of Eye, which consists of a detritus tank, septic tank with sludge pit and circular percolating filters. The scheme is for drainage from a population of about 1,000, provision having been made for an increase of 1/3. Water consumption in the parish is 10–15 gals. per capita per day giving d.w.f. of 10–15,000 gals. per day to be treated at the works.—*Surv.*, 68:189 (Aug. 28), 1925. Abstracted by R. E. Thompson.

Sludge Disposal—A brief general discussion of methods of sludge disposal including dumping at sea, pressing, shallow burial, lagooning and digestion, and of utilization for grease extraction, production of gas by carbonization, and for the manufacture of fertilizer. A summary of the returns of 99 sewage works contained in the 1922 Proceedings of the Association of Managers of Sewage Disposal Works shows that lagoons are in use at 67 of the works and presses at 19; disposal on land is employed at 16 and by trucking at 3.—P. G. Lloyd, *Surv.*, 68:447 (Nov. 20), 1925. Abstracted by R. E. Thompson.

Effect of Period of Storage on Microorganisms in Reservoirs—In connection with studies for the North Jersey District Water Commission the effect of length of storage on numbers of microscopic organisms in several North Jersey lakes was determined. The results are presented in tabular form and compared with similar data of the Croton system of New York City. The apparent effect of storage is to reduce microscopic growths. Freedom from such growths is most apparent where reservoir capacities are large enough to store for a period covering both spring and fall overturns.—Robert Spurr Weston, *Amer. City*, 34:37 (Jan.), 1926. Abstracted by J. K. Hoskins.

York Township Disposal Plant—A brief illustrated description is given of a sewer system and treatment plant recently put into operation. The treatment works consist of rough screens, aeration channels (retention period 4–8 hours), and a Dorr clarifier (1½–3 hrs.). The compressed air is supplied by electrically-driven compressors, and provision has been made for re-aeration of the returned sludge. The effluent is discharged into the Humber River. Two storm water clarifiers have been provided.—*Canad. Eng.*, 49:443 (Oct. 6), 1925. Abstracted by R. E. Thompson.

Some Present-Day Aspects of Sewage Disposal—This is a general discussion of sewage disposal, in which the need of research work is strongly emphasized. The collection and periodical circulation of authentic data from typical sewage plants, together with results of most recent research work, would be of enormous value. The Ministry of Health has already signified its intention of undertaking this work.—Arthur J. Martin, *Surv.*, 68:433 (Nov. 13), 1925. Abstracted by R. E. Thompson.

Municipal Engineering Enterprises in Stellenbosch, South Africa—*Sewage Disposal*—The recently constructed sewage treatment plant consists of primary and secondary screening chambers, upward flow sedimentation tanks of the Dortmund type, and filter beds. The screenings are buried and the sludge from the sedimentation tanks is dealt with in special sludge digestion tanks.—E. J. Hamlin, *Surv.*, 68:195 (Sept. 4), 1925. Abstracted by R. E. Thompson.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M.D.*

Lead Intoxication and Impotence—Dr. Koinuma, medical expert of the home department, made an investigation of the health conditions of 637 families of workmen in big storage battery factories in Osaka, Kyoto and Yokosuka, and in some big potteries. The statistics concerning 298 families of storage battery employes show the effect of lead intoxication on generative capacity:

170 workmen engaged in lead work: Effects	Families	Percentage
Sterility	42	24.7
Premature or stillbirth or miscarriage	26	8.2
Death of nurslings	70	24.2
128 workmen not engaged lead work:		
Sterility	20	14.8
Premature or stillbirth or miscarriage	10	2.8
Death of nurslings	66	19.2

—Foreign Letters, Japan, *Jour. A. M. A.*, Vol. 86, No. 25:1924 (June), 1926.

Arguments upon Prohibition of Lead Paints—On the order for the second reading of the Lead Paint Bill, Sir W. Joynson-Hicks (Home Secretary) said that two proposals were made at Geneva for dealing with the evil of lead paint poisoning. One was that the use of lead paint should be prohibited altogether, and the other that every effort should be made by regulation to minimize the danger arising from its use. There was a very great demand for the use of lead paint, and the employers who used it told him quite clearly that the substitutes that had been suggested were not satisfactory. He was not prepared at the present time to go the whole length of prohibition, because it had not been proved to his satisfaction that it was necessary. The regulations contemplated by this Bill had been agreed to by employers and employes. The Bill would enable substitutes to be used although he would not say to entirely reduce lead poisoning. This measure was experimental and not final. If it proved inadequate, he would not hesitate to come to the House again for a Bill which would prohibit the use of lead paint.

Speakers against the Bill said: R. J. Davies (Labor Party): This Bill did not ratify the Geneva Convention on lead paint against which no votes had been cast. The master painters and the operatives were at one in favor of ratification. Lead paint poisoning was increasing—1919 the total number of sufferers was 207; in 1922 it was 246; in 1923, 337; and in 1924, 486. The Home Office would be unable to enforce these regulations because painters were employed by twos and threes in different houses. There were about 70,000 housepainters and decorators in the country. The State Office of Works had dispensed with white lead in paints. Lord H. Cavendish-Bentick, a Unionist Member, said the present Bill would prejudice the onward progress of reform. He was more than annoyed that a Conservative Government should have brought in such a rotten and useless measure. Mr. Viant, in moving the rejection of the Bill, said he was speaking from experience as a man associated with the trade. When a painter caught the disease it was often transferred to his wife and children. Adequate substitutes existed for lead paint, and its use in interior work was quite unnecessary. One of the regulations provided that before a painter got employment he must show a clean bill of health. That would impose upon the painter and his family the taint of pauperism unless he got financial assistance while unemployed. Factory inspection was a farce as were the regulations proposed. Captain Hacking (Under-Secretary to the Home Office) said the position had been modified since the Geneva Convention, procedure by regulation had become more practical because

* The editor of this Section will gladly receive contributions from members. Please address all communications to Hartman-Ohio Bldg., Columbus, O.

of the inventions that had taken place, and one of the most important was the invention of water-proof sandpaper. The second reading of the Bill was carried by 131 votes to 56—majority 75.—House of Commons, *The Lancet*, June 12, 1926, p. 1178.

Street Risk of Carbonic Monoxide Poisoning—The investigators examined the blood of 18 traffic patrolmen in the most congested mercantile districts of Philadelphia and found the saturation of the blood with carbon monoxide ranged from about 5 to 13 per cent by Haldane's method of analysis, and from 0 to 30 per cent with the Sayers, Yant and Jones' method—the best accuracy with which was considered to be within 5 per cent. The street risk was 8 hours of maximum exposure. They conclude: "The existence of a definite risk of repeated or chronic slight carbon monoxide anoxemia is confirmed." The higher amounts found are consistent with slight symptoms, but same was not inquired into in the persons examined.

(Norris and Gettler, recently abstracted in these columns, reported autopsies in New York on coroner's cases invariably showed the presence of carbon monoxide, and that unless 10 per cent were present, no significance was attached to the finding. It is also to be pointed out that reports on the blood of smokers have shown equally as high carbon monoxide content as those reported by the investigators herewith.—E. R. H., Wilson, Gates and Dawson, *Jour. A. M. A.*, Vol. 87, No. 5:319 (July 31), 1926.

Regulation for Prevention of Lead and Gas Poisoning—The South Australian Government has adopted Additional Regulation No. 14, under the *Mines and Works Inspection Act* of 1920, which requires the observation of a set of special rules for the prevention of lead and gas poisoning at all mines and works, in addition to the general rules. There are covered definitions of words and phrases used, some of which are: "lead materials"—any material containing not less than 2½ per cent of lead (this conforms with the standard recently adopted by Austria, but is more rigid than the British regulation of 5 per cent); "lead process"—any process for the manipulation, movement or treatment of lead materials for the recovery of lead products and by-products, and including the cleaning, demolition or repair of any furnace, melting pot, retort, flue or other structure or appliance in connection with the treatment of lead materials; "damp"—sufficiently moist to prevent the escape of dust; "inspector"—an inspector of mines under the Act.

A warning notice shall be exhibited in any place where a lead process is carried on which states the danger to individuals from lead dust and fumes, and carbon monoxide gas, and advises persons suffering from certain symptoms to present themselves for medical examination. Regulations are to be posted, industrial diseases to be notified to an inspector, all lead materials must be properly stored and handled in such a manner as to prevent dust from arising therefrom, special precautions (as defined) shall be taken for flue dust, the laying of dust by sprinkling, all buildings must be "adequately and constantly" ventilated, dust prevented on the roadways in the works area, overalls and respirators provided in certain processes, provisions made for meal rooms, change houses, bathing facilities, wholesome and safe drinking water, while it shall be the duty of employes to comply in the matters of dust prevention, clothing, respirators, washing and eating.—*Health*, Commonwealth of Australia, Melbourne, Vol. 55, No. 3:85 (May), 1926.

Half-Knowledge Is Dangerous in Ventilation—The author reprints the resolutions upon ventilation passed at the St. Louis meeting of the American Public Health Association. These have been misunderstood by many people, and must have been misunderstood by the members of the association who passed them. The meeting allowed itself to be stampeded by selfish and interested parties. The resolution gives a misleading impression when it implies that furnishing as large a volume as thirty cubic feet per capita per minute is necessarily accompanied by overheating of the rooms occupied by the students of a public school. Since we must remove body heat, sun heat, and surplus direct radiator heat, ventilation means cooling even more than it means heating. We cannot use air much cooler than that already in the room, for cooling the room, and so we often find 30 cubic feet per minute an insufficient volume.

From the first resolution, while a non-proprietary method appears to be recommended, the ordinary owner would be at the mercy of the salesman for some more or less patented arrangements. "The second of the 'resolveds' calls for repeal of all laws which

interfere with ventilation by windows, and not for repeal of what apparently was in view when the second 'whereas' was written, a smaller compulsory requirement than 30 cubic feet per minute per capita." The author has had some experience with school house ventilation, and with the drafting and enforcement of compulsory ventilation laws. "I have nothing to sell in the way of fans or systems of ventilation. While I receive some professional compensation from design of ventilating plants, the basic service I perform is a heating service, and if all fans were eliminated I need not worry."

The New York state commission on ventilation did not have time or money to complete its work. The more we learn about its observations, the less confidence we have in its findings, and the more do we find mechanical ventilation, after all, vindicated. "This New York report, however, was used at St. Louis to work a crowd of doctors and public health officials to pass an unworthy and hysterical diatribe." Air is wonderfully elastic; it clings and drags much after the manner of cold molasses around a spoon. "Cold air striking human beings is uncomfortable."

[There follow a considerable number of observations concerning the mechanics of ventilation, with several illustrations which purport to show the results which follow the use of the "open window gravity exhaust" method advocated by the New York Commission, but apparently without taking into consideration several safeguards thrown around same as recommended by the Commission, such as deflector boards for windows, dampers in exhaust ducts, heating units in certain exhaust ducts, aspirating cowls at roof openings, radiator shields to protect persons seated nearby from the direct effect of heat from the radiators, the prevention of overcrowding by specifying the minimum cubic feet per capita according to the age or grades of school children, etc., etc.]

"All the doctors of medicine in the land have failed to tell us what is the matter with this so-called 'vitiated air.' We do not even know definitely that this particular vitiated air needs to be removed." The fuel consumption for gravity heated and ventilated school buildings is usually about double that for mechanically ventilated buildings—get records from local boards of education, or from Chicago, Toledo, St. Louis, or from the author. In his own experience, sleeping with one window open, say 6 inches from the top or bottom, in a large room, some 14 by 19 feet, giving an infinitely greater area than there would ever be per capita for an American public school room, a restless night is passed. "Noses are congested and colds are feared, due, probably, to our having breathed much more rapidly than the daytime normal rate, evaporating the mucous effluent." It is necessary to arrange for two open windows, or otherwise, to get a very noticeable air movement.

Discussion follows on "*Window Ventilation? But How About Temperature, Motion, Humidity, Dust, Odors?*" with examples taken from his experience in an office building, from visiting school buildings using window ventilation with gravity ventilation flues, etc., with most objectionable results, etc. One plant had been revised to fit the American Public Health optimum specifications. "Instructions were to let one window down from the top for air supply. . . ." [Apparently, the author forgets that one of the "specifications" is that the windows should open from the bottom and not from the top.] "Radiators in classrooms are usually the outcome of slovenly design, (that) they cause overheating, dirt, dryness, are very costly in fuel, and that they occupy very valuable floor space in the lightest part of the classroom." We were told by the doctors of medicine that artificial humidity should, wherever possible, be provided. [Still, Hayhurst found this to be incorrect, at least for climates like that at Columbus, Ohio, and, in general, whenever the temperature was not under 25–30° F.—see "Air-Conditioning the Home," Trans., Amer. Soc. Heating & Ventilating Engineers, Vol. 25, No. 1:1–14, Jan., 1919.]

"I admit that we may with better building construction, and with better design of inlets and outlets, control temperature, motion, odors, and humidity with a smaller per capita air supply than 30 cubic feet of air per minute."

Schools in Chicago, St. Louis, Kansas City and Toledo and many other places are designed so that they cannot be heated with direct radiation without ventilation [*mechanical* ventilation is probably meant]. Recent improvements have many inlets in the ceilings, and, in certain cities, inlets at the floor along the outer wall, with a hope that less volume than 30 cubic feet per minute may be effected.

The resolution in question is destructive. "This article of mine is inclined to be the same way, even though I have measurably toned

down the expressions of my first draft." "I am forced to conclude that most of the good doctors had to stay home last summer, and that the St. Louis meeting which passed this resolution, was in the hands of an irresponsible minority. The resolution ought to be recalled." [However, the meeting was held October 18–22—hardly in the summer time; the attendance of some 900 persons was one of the largest held in recent years, and no opposition was voiced to the resolutions in question, either in the Governing Council when it was passed or at the General Sessions that evening when it passed the Association without a dissenting vote, if the abstractor's memory serves him correctly.]

The interested reader should read Mr. Lewis' article in full.—Samuel R. Lewis, *Domestic Engineering*, July 31, 1926, p. 18.

A digest of "*Fundamentals of Ventilation*" covering in part the report of the New York State Commission on Ventilation, of the British Medical Research Council's "Science of Ventilation and Open Air Treatment" (written by Leonard Hill), of Parkes and Kenwood's viewpoint (English) in their "Hygiene and Public Health," and some other sources was prepared by Hayhurst and Dysart and published in the April, 1925, issue of the AMERICAN JOURNAL OF PUBLIC HEALTH, pp. 367–370, especially for those to whom the original reports and sources may not be readily available. In this digest the comparative merits, as well as could be discerned from the original texts, of "window ventilation," "fan (or mechanical) ventilation," and "recirculation" are tersely given under the headings of *advantages, disadvantages* and *conditions* necessary, for each type of ventilation. However, the reader should if possible consult the original texts.

The Recent Zinc Poisoning Controversy—We submit the excellent editorial on this subject as printed in the *Lancet* for July 24, 1926, p. 191:

The use of zinc as a protective coating for galvanized pipes and cooking vessels, in cosmetics and medicinally, lends interest to the question whether this metal possesses toxic properties. The acute reaction known as brass founders ague or spelter chills, due to exposure to vapour of the metal at high temperatures, may be disregarded as resulting from an unusual physiochemical state; but even here chronic manifestations following frequent attacks have not been described. The subject has been approached in two recent articles in both of which literature bearing on it is summarised; but the conclusions drawn are unusually diverse. One of these articles[1] considers the position of the workers in galvanizing plants exposed to fumes of zinc sulphate and zinc chloride; here the authors report widespread gastro-intestinal conditions, varying from gastro-enteritis in the younger workers to gastric and duodenal ulcers in older men. A period of from 5 to 20 years is thought necessary for the production of these lesions. The experimental work of others is claimed in support of zinc being the causative agent. No such train of events, however, has been described in this country; on the contrary, in one district where galvanizing is the staple industry, gastric ulcers, although not uncommon among domestic servants, have been noted not to occur among the factory women.

The second article referred to[2] gives the evidence for considering zinc to be universally present in animal tissues, and present in remarkably similar total concentrations in animals of different species and in approximately constant concentrations in different animals of the same species. The authors deduce from the facts that this metal, instead of being a poison, takes part in normal metabolism of plants and animals. Corn deprived of zinc becomes chlorotic; it acts as a catalytic fertiliser for maize. Animals on a zinc-free diet do not flourish; the zinc content of yolk of egg, milk and spermatic fluid is high. An understanding of the normal occurrence and rôle of zinc is needed when evaluating the effects of abnormal amounts introduced in the course of exposure to industrial processes. The suggestion is certainly new that zinc promotes the efficiency of growth processes.

[1] An Occupational Disease among Zinc Workers. C. P. McCord, A. Friendlander, W. E. Brown and D. K. Minster. *Archiv. Intern. Med.*, May 15, 1926.

[2] The Significance of Zinc in the Living Organism. K. D. Drinker and E. S. Collier. *Journ. Industr. Hygiene*, June, 1926.

FOOD AND DRUGS

WALTER S. FRISBIE

Lactic Acid in the Soft Drink Industry—This article refers to the accepted use by the bottlers of citric and tartaric acid as the ordinary acidifiers in carbonated beverages. Lactic acid is widely produced in the human body and is a chief constituent of certain preparations advocated as healthful drinks. The author suggests the practicability of this acid for bottled beverages. He has performed experiments with a 60 per cent lactic acid solution and a 50 per cent tartaric acid solution, making up various mixtures of pure acids and mixtures of the two. They were used to acidify either lemon or raspberry extract and the finished beverage contained 7½ per cent pure sugar. The acid content was approximately 1:1,000 in each case. Samples were found to be uniform in keeping qualities and the palatability was observed on a group of 20 men, women and children. Consensus of agreement in this group favored those beverages which contain both acids. The fact is cited that numerous soda water plants throughout Germany are using more or less lactic acid in the preparation of their beverages. —Dr. Bruno Rewald, *Natl. Bottlers' Gazette*, p. 110, July 15, 1926.

Should Food Be Thoroughly Cooked—Professor Dr. Friedberger, hygienist at the University of Greifswald, on a year's leave of absence in Berlin, taking meals at restaurants and dining somewhat irregularly, noted that when he ate dinner late in the afternoon, 4 to 5 P.M. instead of at 12 noon, his appetite was soon appeased and although he consumed larger portions he found that the meal was not ultimately as satisfying as when dining earlier. This led him to conduct metabolism experiments on adult rats. Rats 14 days old, belonging to the same litter and of equal size, were kept in separate cages under similar conditions. To them he gave freshly cooked restaurant food, and again later, similar food that had cooked 4 hours. The feedings were comparable as to quantities and caloric value. In 10 days the rat which had been given the freshly cooked food attained a weight of 50 grams while the rat which had received food cooked for 4 hours weighed only 36 grams. After 60 days the weights were 448 grams compared to 190 grams, the first rat having doubled its weight in 14 days, the second requiring 31 days.

The quantity of food, when considered, is striking. The first rat did not consume all of the 30 grams of food while the rat fed with over-cooked food ate all and gained less in weight. Greater differences were noted when rats were given raw food which was utilized to better advantage than normally cooked food. The failure to utilize the food was not ascribed to loss of vitamins since the ingestion of additional food known to be rich in vitamins caused no change. The conclusion is reached that over-cooked foods cause a partial destruction of food values.—*Jour. A. M. A.*, 87, 3:186–7, July 17, 1926.

Proteins of Wheat Bran—Feeding experiments with rats were undertaken to obtain information concerning the biological value of the bran proteins and to determine to what extent these are available for assimilation, when the animals are fed crude bran instead of the isolated proteins. Experiment was also conducted in which the ration was prepared by washing most of the endosperm from commercial bran and on this the animals did not grow as rapidly as on those containing unwashed bran, but when five parts unwashed bran in the ration were replaced with flour the improvement was material. The authors conclude there may be present in white flour some nutritionally essential dietary factor which is either deficient or lacking in the bran, and if this be true replacement of bran with white flour is a supplementation and losses cannot be attributed to the nutritional superiority of white flour as a whole.

On an exclusive white flour source of nitrogen in a ration otherwise the same the animals gained only 1/2 to 2/3 of that gained by rats on unwashed bran. Another explanation advanced is that during the washing some

of the albumin and globulin of the bran itself is removed with the starchy endosperm which would cause a disproportionate lowering of the nutritive value because the percentage of essential amino acids is greater in the albumin and globulin than in the prolamin which will be undissolved. Feeding experiments were conducted using unwashed wheat bran and washed bran supplemented with 5 per cent white flour. Also in order to compare the relative growth-promoting value of the proteins with those of the endosperm, feeding experiments were conducted using entirely patent wheat flour containing 1.82 per cent of nitrogen. It was found that the bran proteins are well utilized when 70 per cent of a ration, known to be adequate as to other dietary factors than proteins, consisted of washed bran from hard spring wheat containing no detectable quantity of embryo and not more than 3 per cent of the endosperm. Rats grew at an excellent rate for 15 to 16 weeks on the exclusive protein source from commercial bran (unwashed). When the sole source of protein is derived from patent wheat flour, rats grew for the first 15 to 16 weeks about 1/2 to 2/3 the rate shown by rats receiving the bran.

"Although the bran ration was very efficient for the promotion of growth in young rats during the first 15 or 16 weeks, for the subsequent 48 weeks, however, only little better than maintenance of body weight resulted. Rats fed the bran diet produced offspring, but they had little success in rearing them. Fecundity was low."—J. C. Murphy and D. B. Jones, *J. Biol. Chem.*, 69, 1:85–99, July, 1926.

Quantitative Determination of Tin and Lead in Canned Preserves—The author finds the existing methods either untrustworthy or too laborious and suggests a procedure for the determination of both metals in the same sample. Forty grams of the well mixed sample are treated with 100 c.c. of concentrated citric acid in a 500 c.c. Kjeldahl flask. If the sample contains much sugar or fat the flask is allowed to stand overnight. Twenty-five c.c. concentrated sulphuric acid is added in small portions and, when the foaming has ceased, the mixture is carefully heated over a small flame. As soon as danger of boiling over has passed, the flame is increased and the contents quietly boiled until nitric acid is driven off and white fumes of sulphur trioxide appear. The mixture is cooled, and 5 c.c. concentrated citric acid are added again, boiling until SO_3 develops. This operation is repeated until the contents are perfectly clear and colorless and then boiled for one-half hour longer. After cooling, 25 c.c. saturated ammonium oxalate solution is added and again boiled until fumes of SO_3 develop. The contents are transferred to a small beaker with the smallest possible amount of water, then placed on the sand bath until the volume is approximately 5 c.c. After cooling, dilute alcohol (1:1) is carefully added with stirring. The next day the precipitated lead sulphate is filtered through an Allihn tube and washed with a very small amount of alcohol. The lead sulphate is then dissolved on the filter with 30 c.c. of warm, slightly acetified sodium acetate solution (100 grams per liter) followed with 20 c.c. water. To the volume of about 50 c.c. is added 10 c.c. of approximately N/50 potassium bichromate solution. After standing one-half hour in the water bath until precipitate flocculates lead chromate it is filtered through an Allihn tube and washed with water. The stopper with the Allihn tube is placed in a 300 c.c. Erlenmeyer flask containing 70 c.c. of water, 5 c.c. potassium iodide solution (100 grams per liter) and 5 c.c. concentrated H_2SO_4 (Specific gravity 1.29). Ten c.c. of hydrochloric acid (60 grams to the liter) are poured through the filter without suction. The tube is quickly washed under suction a couple of times with water and the free iodine is then titrated with N/50 sodium thiosulfate solution with starch indicator. One c.c. N/50 thiosulfate solution corresponds to .00138 gm.Pb. In the filtrate from the lead sulphate precipitate after removing alcohol the tin is determined according to a volumetric iodine method given in detail by the author.—Aage W. Owe, *Zeit. für Untersuchung der Lebensmittel*, p. 214, April, 1926.

"Lack of Iodine" Theory—In a letter to the editor criticism is made of the statements in a letter by Dr. Fraser and Mr. Tankard who assumed that the supply of iodine in the body is obtained principally through drinking water. This correspondent states that the amount of iodine in the food and drink of a locality depends upon the amount in the superficial layers of the soil, and has no relation to the deep geological formations and the waters derived therefrom. The intake of iodine in drinking water is probably very small, the body being supplied principally through vegetables, cereals, and milk.—*Lancet*, 211, 5367:96, July 10, 1926.

CHILD HYGIENE

MERRILL E. CHAMPION, M.D.

Health on Display—Have you ever wandered through the Hall of Health of Mankind, located in the Arts and Industries Building of the Smithsonian Institution in Washington, D. C.? Here are displayed models illustrating various phases of personal and community hygiene. A small placard at the outset cautions one to "look carefully, think, remember," for "personal health may be obtained by knowledge; public health can be bought with money." The exhibit is planned in a logical manner, starting with The World We Live In, depicting environmental problems related to health and followed by The Health of the People, in which the road to health is shown as it wends its way from the beginning of life to old age.

One exhibit shows a ship swinging idly by a staunch old wharf. The ship bears the name of Child Health and the captain, who has qualified by having a health examination, is Mother. Overhead a sign informs us that "Your Baby is About to Start on a Long Trip" and below is shown his passport, a clean bill of health. The cargo, piled on the wharf, consists of fruit, vegetables and milk. In case of mishap there is a life preserver marked "birth registration." The buoys that show the channel are also tagged; they are breast feeding, and light and air. This exhibit was furnished by The American Child Health Association.

An exhibit by The American Social Hygiene Association is three-fold, showing us the way life begins; the family as a social unit; the various activities needed in the social hygiene movement; informational, protective, recreational, legal, and educational.

Other national health associations have contributed their share to this picture of health. To profit most from an exhibit, no doubt one should see it; but for those who cannot go to Washington, or to the American Museum of Natural History in New York City where there is another excellent public health exhibit, a ramble through the pages of the August number of *Hygeia* will prove both interesting and illuminating.—James A. Tobey, *Hygeia*, Aug., 1926.

Child Welfare in New Zealand—We have read so much about the excellent results obtained in New Zealand in lowering the infant mortality rate, that a description of methods used, and a comparison with English methods, are most interesting. Infant welfare work in New Zealand was started by the Plunkett Society about 1910. This voluntary organization continued its work independently until 1922, when it became closely associated with the government, and Dr. Truby King was made Director of Infant Welfare. In 1925, 120 Plunkett nurses were at work throughout the dominion.

The Plunkett Society supervises infants up to 2 years of age; but there is no organization working with the 2 to 5 age group. Names and addresses of all new-born infants are routinely reported by the Registrar-General to the various branches of the Society. The services of the nurse and the clinic are then offered to all, regardless of class. At the Clinic a specially trained nurse weighs the babies, instructs the mothers, and treats minor conditions, as vomiting (uncomplicated), constipation, diarrhea, and mild rashes. There is no medical attendant at these clinics; but if medical advice is deemed necessary, the mother is sent to her family physician or to a hospital. Feeding of infants is practiced according to the methods advised by Dr. Truby King.

For the children in the primary schools the health department of the government provides school hygiene service, and the education department supervises the physical education. Dental treatment is also provided by the government for all children up to 8 years of age.

Much credit is given to the Plunkett Society for its influence in lowering the infant mortality; but it is also noted there are other factors to be considered: the sturdy race stock of the early settlers; the sunny climate; the plentiful food supply at comparatively low prices; the nonexistence of slums; and the almost universal custom of breast-feeding.—Bernard Myers, C.M.G., M.D., *National Health*, London, July, 1926.

Psychology of the Expectant Mother—This is an interesting report of a talk by Dr. Alice Hutchison at the Association of Infant Welfare and Maternity Centers on a topic too often overlooked.

The mental reaction of the primigravida, the mother of 7 or 8 children, the mother who does not want a child, the resentful mother, and the unmarried mother, were all discussed.

The points brought out during the discussion were: "That interesting psychological situations could be studied when a woman came to the antenatal clinic to ascertain whether she were pregnant or not; that a midwife's visit was not always liked by the expectant mother, since it gave publicity to a matter she preferred to keep to herself, whereas, except in the case of a primigravida, a health visitor's call might be on behalf of another child; that a home visit to an expectant mother suffering from depression offered her an opportunity to unburden herself of her mental distress, while at a busy antenatal clinic, time was at present lacking for attention to more than her physical ailments."—*National Health*, London, Jan., 1926.

Present Status of the Toxemias of Pregnancy—Polak discusses under this head hyperemesis, the preëclamptic toxemias and eclampsia.

He points out that, "at present all clinical evidence tends to substantiate the theory that hyperemesis is the result of a vicious cycle beginning with a carbohydrate deficiency—and that the pathological changes found in the liver, kidneys and blood are the result of starvation and dehydration. That pernicious vomiting is a serious complication of pregnancy is evidenced by the fact that it has a mortality of more than 20 per cent."

The investigations of Watson, Harding and Titus are quoted in the summary of causal factors of vomiting in pregnancy.

Polak in this article would place the neurotic factor first, before both metabolic defect and intestinal intoxication, important as they are.

The significance of blood chemistry in this connection is briefly stated and accepted as clinical evidence that dehydration and starvation are the basic factors upon which treatment should be established.

Under preëclamptic toxemias (hepatic, renal) Polak's study tends to confirm that of Herrick of Sloan Hospital, that the woman who shows preëclamptic toxemia or eclampsia "is the woman who starts her pregnancy with defective emunctories or an unbalanced endocrine system."

Diagnosis and treatment are discussed. The earliest evidences of toxemia are stated as follows:

1. A rise in the systolic blood pressure
2. The appearance of an albuminuria coincident with or appearing soon after the occurrence of hypertension
3. Diminished urinary output—the quantity of urine eliminated falling below 1,000 c.c.
4. An increase in the body weight beyond the normal 25 pounds (11 Kg.)
5. The appearance of edema in the face, hands and feet
6. Constipation associated with "heartburn" and epigastric distress
7. Frontal headache
8. Eye symptoms, ranging from spots before the eyes to amaurosis

Antepartum care is mentioned as "one of the greatest strides in preventive medicine. It has resulted in many clinics, in the passing of eclampsia."

Management of labor—the presence of convulsions is founded on three all-important principles; avoiding trauma, preventing infection, diminishing shock; and Polak concludes that "the treatment of eclampsia is essentially medical and surgical delivery has only a limited field."—John Osborn Polak, M.D., *Jour. A. M. A.*, July 24, 1926.

General Principles Governing My Infant Feeding Problem—Doctor Kerley outlines his methods in infant feeding and emphasizes the point that no hard and fast rules can be followed with either well or sick babies.

In using fresh milk with well bottle-fed infants, he finds it much easier of assimilation if it is cooked with starch (baked barley flour usually) and also feels that cooked milk is far safer to use. Given orange juice and cod liver oil the danger of scurvy or rickets is nonexistent, in his opinion. A cereal food (oatmeal or some of the wheat preparations) is added at about the seventh month and a few weeks later vegetables such as carrots, squash, spinach and boiled lettuce are given.

For babies with digestive troubles, cases of malnutrition and marasmus, habitual vomiting, or tendency to looseness of the bowels, he uses evaporated milk, giving as the reason that it "requires about 50 per cent less digestive effort than does fresh cow's milk," and reminds us

that evaporated milk is a dairy product standardized by federal government. One ounce of evaporated milk equals a little more than two ounces of fresh cow's milk. It is also used cooked with some form of starch (baked flour of barley, wheat or oats), and orange juice and cod liver oil are always given "provided the child can take care of them."

Every infant is an individual problem and demands close study on the part of the physician.—Charles G. Kerley, M.D., *Arch. Pediat.*, July, 1926.

Pediatrics in General Practice—In an instructive and entertaining article Doctor Garland warns us against overspecialization and emphasizes the fact that general pediatrics is one of the functions of the family physician, though granting the desirability of "an average number of pediatricians."

The following less common diseases of infancy are discussed in some detail—hemorrhagic disease of the new-born, pyloric stenosis and intussusception. Lobar pneumonia is specially mentioned because of the difficulties of differential diagnosis.

Doctor Garland believes breast feeding to be possible for the majority of mothers and feels that it is the physician's duty to see that proper measures are taken to achieve this object. He says, "Given a healthy mother and an infant capable of taking the breast our first obligation is to promote the secretion of milk and this can best be accomplished by regular and complete emptying of the breasts, by an infant if possible, if not, by the pump or by manual expression."

Bottle feeding when actually necessary, may be successfully carried on with the simpler whole milk dilution.

Doctor Garland advocates the addition of strained, well cooked cereal and green vegetables by the end of the sixth month for both breast and bottle-fed babies.—Joseph Garland, M.D., *Boston M. & S. J.*, July 15, 1926.

Psychiatry and Pediatrics Have Definite Relationship—This article emphasizes again the still much needed warning that we do not confine ourselves too closely to the physical side in dealing with children's disorders. Abnormal or excessive reaction to external stimuli in the physical or mental environment will bear close study in order to gain full understanding of such problems. "To gain this understanding we must be in a position to study carefully a child's mode of reaction to the outstanding life problems."

Bad habits, thumb sucking, periods of unconsciousness, etc., may become the method used by the child to get his desire or to assert himself. Again, "Inability to meet sex situations in a normal way is the basis for innumerable difficulties of childhood and leads on to a variety of adult maladaptations." Dr. Smith makes an excellent point, when he urges that we "must realize that many of our sex problems are soluble, when we look on them as a stopping at one of these way stations (self centered interest, interest in someone in the immediate surroundings, in a person of the same sex and ultimately in one of the opposite sex), rather than as a horrible perversion. This insight allows us a rational mode of procedure."

His brief summary is quoted in full as the points covered are all extremely important: First, that a careful clinical study of a case is not always sufficient for a complete recovery; second, that a variety of neurotic symptoms are indications of deep seated personality trends and that certain personality trends may be considered as forerunners of an insanity; third, that neurotic sypmtoms are usually made use of by the child; and fourth, that the pediatrician and the psychiatrist should work together more closely, and with a better mutual understanding.—Sydney K. Smith, M.D., *Nation's Health*, June, 1926.

The Health of the School Child—In this article Dr. Miller stresses the need of a school health program and reviews some of the existing conditions in China. Sanitation of school buildings is a big problem. Buildings originally planned for schools were fair, but some of them were remodeled shop buildings which could not be adapted to modern sanitary ideas. In a recent survey of 18 Mission Lower Primary Schools in one city it was noted that only one of the buildings could be called sanitary, and even here the water came from a well known to be contaminated, although the water provided for drinking was boiled. The common cup and community towel were being used.

Another serious handicap to health teaching is that the teachers themselves are not physically fit. An examination of the teachers in the Lower Primary School in 2 of the provinces revealed that 39 per cent had defective vision, 30 per cent trachoma, 31 per cent en-

larged tonsils, and 15 per cent enlarged thyroid. Trachoma prevention has become popular in the schools and many of them have trachoma clinics in operation.

In spite of the handicaps, however, a good bit of health teaching is being carried on and the question coming from teachers with increasing frequency is, "How can I help to improve the health of my students?"

Physical examination and follow-up work are being carried on by doctors and nurses of the mission hospitals.

Dr. Miller recommends:

1. Health teaching to be made a part of every school curriculum beginning with the kindergarten and extending through all the grades until the end of the Middle School
2. Medical supervision of students and teachers
3. Training of health workers
4. Improved school sanitation.—Iva M. Miller, M.D., *China Med. Jour.*, Dec., 1925.

A Medical Clinic for Dependent Children—An experiment in the medical supervision of dependent children in Philadelphia in the past 6 years is described. The child-caring and child-placing agencies of the city formed a coöperative clinic where the children under their care might receive complete physical examinations and recommendations for care. The advantages of such an arrangement over the hospital out-patient department are several: The staff is permanent and therefore becomes acquainted with the problems of the various children; more time may be devoted to the individual than in the usual busy out-patient clinic; already overcrowded dispensaries are relieved of these time-consuming examinations; detailed reports of the findings and recommendations are quickly available to the agency.

The coöperation which has been built up between the physician and the social workers has been a factor in securing the best results. But, what of the child? Studies of achievements in correcting defects, protecting children from preventable diseases, and building up their health, have proved the value of this type of service to dependent children.—Horace H. Jenks, M.D., John D. Donnelly, M.D., *Child Health Bull.*, May, 1926.

Broken Children—This is a most comprehensive article with a pathetic but also rational appeal. Considered under three headings—physically broken, mentally broken, spiritually broken—children are handicapped physically even before school life through physical defects caused by ignorance, neglect and inherited taint.

The Parent-Teacher Association has in large measure helped to minister to the needs of this class of children.

The mentally broken child who is below normal can be more normally developed through correct diagnosis, environment and hand training. The neglected super-intelligent child loses out for lack of proper training. Children of this type should be carefully conserved and trained as leaders.

For the handicapped child, namely the cripple, deaf and blind, the author suggests special classes in the regular schools thus furnishing a more normal school environment and retaining the home influence and love.

The delinquents are largely the result of morally delinquent parents and broken homes. The Juvenile Courts as distinguished from the Criminal Courts are organized to protect these individuals from themselves and such courts are needed everywhere.

In addition to points enumerated the author urges "registration of dependent children" that they may not be lost like stray kittens. "Every person or society touching a child should register a transfer in court so that relatives of the child, when grown, could appear before the court, and it should be in the discretion of the judge to state whether or not the relative was worthy to know the whereabouts of the other members of the family."—Judge Camille Kelley, *Child Welfare Mag.*, August, 1926.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Getting Round the Table at Buffalo—Most convention "round tables" are long and big—so big that the table would need to occupy the center of a hotel's main dining room. But the round tables at Buffalo in October, 1926, will be genuine in that the limitation of attendance will mean actual participation by everyone present.

The list is given with the Preliminary Program in this issue.

Tickets for these luncheons may be reserved by writing in advance to the secretary of the Education and Publicity Section. If too many apply for any one of the meetings a second session will be arranged.

Evaluation of Health Posters for Adults—What posters, available through national health agencies or commercial sources, can be bought or otherwise secured for use in any part of the United States or Canada? Which of these posters are worth the time, effort and money a local health department or other agency must invest to get them before the public? A session of the Education and Publicity Section will discuss these questions at the American Public Health Association meeting in October. A selection of posters in general use will be passed upon by the judges or critics. Any organization supplying posters is invited to submit samples for consideration by the committee. Any reader who knows of posters, either good or bad, which should be discussed is requested to write the chairman, Raymond S. Patterson, State Department of Health, Trenton, N. J.

How Popular Must Popular Health Education Be?—How far should we go in popularizing health truths? Can we go too far? Do we sometimes sacrifice scientific accuracy for the sake of simplification? What can we do about such cumbersome words and phrases as toxin-antitoxin? When visiting nurses test some of the simplest written leaflets available and discover that they contain words unknown to the families they visit what are we to do about it? Should our newspaper stories contain only such words as ordinarily appear in newspapers? What words should never appear in popular health material? What words should never be used with certain groups?

These and similar questions are to be faced in a session of the Education and Publicity Section in the American Public Health Association convention in October. Dr. Edwin E. Slosson, director of Science Service, or Watson Davis, managing editor, will be the chief clinician. Please send to the secretary of this section samples of your "popular" health material—printed matter, press releases, radio talks, etc. Also send samples of material, issued by yourself or some one else, in which words, illustrations or other elements detract from its popular nature.

POSTAL INFORMATION

Health agencies should be sure that mailing clerks put on full postage for all mail to other countries. In most cases receivers in other countries must *pay double the amount of due postage*. Correspondents in the United States are notorious for neglecting to pay full postage in advance.

CITY DEPARTMENT BULLETINS

Chicago's Health is notable for devoting the whole of its four pages to one topic—with occasional increases in size. Every issue is illustrated. Color is used now and then. In view of the black face paragraph heads the distracting rules between paragraphs seem quite needless.

City Health, Detroit, January, 1926, is devoted to the department's annual report. 40 pages. No index or table of contents.

Health, New Haven, appears in a readable size of type, leaded. The lines of type are longer than is easy for the eye to follow.

Weekly Health Review, Racine, Wisconsin, in a recent issue, ably and briefly compares the local smallpox record with smallpox prevalence

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

in other Wisconsin cities of the same class. Comparisons have real local interest.

Health Bureau, Rochester, carries much interesting comment upon Rochester's current health problems, but it does not look interesting. The type is too small, and the lines of type are too long.

Monthly Report, Toronto, records accounts paid during the month.

Wayne Health News, Wayne County Board of Health, Wooster, Ohio, is an 8-page folder, sealed with a postage stamp and mailed without an envelope.

STATE DEPARTMENT BULLETINS

Illinois Health News (Jan., 1926), reproduced a quarter-page advertisement of the Bloomington Association of Commerce, issued with the consent of the city health officer, which "suggests the tremendous adverse influence of epidemics on trade."

Monthly Bulletin, Indiana (Jan., 1926), had a discussion on "Vital Statistics and Good Government"—an appeal for smallpox vaccination.

Monthly Bulletin, Louisiana, is made up of four small pages of popular material without any statistics or strictly official matter.

The Commonwealth, Massachusetts, devotes every issue to a specific topic, such as tuberculosis, health education, etc.

Public Health, Michigan, is one of the bulletins reproducing the series of leaflets entitled, "Habit Training for Children," issued by the National Committee for Mental Hygiene.

Health, New Hampshire, has been running a series of articles on, "Some 'Bootleg' Cosmetics."

Health News, New York, gives frequent news reports of publicity obtained by local health officers.

The Listening Post, Pennsylvania, conducts a Health Question Box, somewhat on the style of the newspaper health columns.

Bulletin Sanitaire, Province of Quebec, is printed in both English and French in parallel columns.

Public Health Bulletin, South Dakota, has supplemented its original material with helpful selections from other state and city bulletins.

Health Briefs, Tennessee, uses the series on Child Management distributed by the United States Children's Bureau.

Ohio Health News invites each health commissioner in Ohio to write, for publication in the *News,* a short story of what he considers the cleverest piece of preventive work done in his district, whether by himself, his assistants or an outside agency. The article must be 300 words or less in length, and instructions as to names, places and dates will be observed by the editor. It is hoped that each will send in a story, as it is planned to publish one in each issue, if the commissioners respond.

CAMPAIGNS

Imperial Baby Week was celebrated July 1–7, 1926, this being the tenth annual Baby Week in Great Britain. Particulars appeared in *National Health,* London, in the June and earlier issues. Copies of the detailed plans attainable from National Baby Week Council, 117 Piccadilly, London, W. 1, England. The National Baby Week Council in connection with its campaign of propaganda this year has selected for prominent attention three special aspects of the maternity and child welfare problem: (a) The Care of the Mother, During Pregnancy, Confinement, and Lactation; (b) The Care of the Toddler; and (c) The Father's Part in the Child Welfare Movement.

The Summer Round-up of the Children conducted by the National Congress of Parents and Teachers, 5517 Germantown Ave., Philadelphia. "To send into the First Grade a class of children 100 per cent free from remediable defects." $500 in prizes offered by the *Delineator.* Plan of work and detailed reports from the 1925 prize winning communities supplied free.

CORRESPONDENCE COURSE

"The Massachusetts State Departments of Health and of Education, through the State Division of University Extension, are the sponsors of a new correspondence course in hygiene for prospective mothers, which should prove of great benefit to both individuals and the community. It may be taken with profit by nurses also.

"The course consists of 15 chapters, or lessons, which are furnished at a nominal charge of $4.00 to persons who enroll for instruction by the correspondence method, as provided by the State Division of University Extension. . . .

"The papers will be corrected, with necessary comments and suggestions by an experienced physician on the staff of the State Department of Public Health." Address James A. Moyer, Director University Extension, 217 State House, Boston, Mass.

SLIDES AND FILM SLIDES

Film slides entitled "The Healthy Baby," "Rickets," "Trails that Lead to Mothers and Babies" (illustrating the work done under the Sheppard-Towner Act for the protection of maternity and infancy), "From School to Work," and "The 'Bad' Boy Makes Good," are being shown by the Children's Bureau in the U. S. Department of Labor exhibit in the Transportation Building at the Philadelphia Exposition.

Barns' Cartoons for Health, a series of 40 cartoon lantern slides prepared by Burton A. Barns, director of visual instruction, and N. H. Pearl, supervisor of health education, Detroit public schools, are for sale by Detroit Publishing Company.

PROBLEMS AND METHODS

"Coöperation With Student Eating Places," by Fannie E. Beal. *Jour. Home Econ.*, 18:96–98, Feb., 1926. Suggests hopeful possibilities for educational work with boarding houses and eating places by health agencies interested in diet in student and other communities.

"How a Professional Organization Can Educate the Laity," by John M. Dodson. *Jour. Am. Dent. Assn.*, 13:797–803, June, 1926. Reviews educational activities of the American Medical Association.

"A Modern Medicine Man," by J. Clarence Funk. *Hygeia*, Aug., 1926. The educational value of the health car.

"Nature Trails," by Frank E. Lutz. American Museum of Natural History, New York: 36 pp., 10 cents. An experiment in outdoor education. Application possible for sanatoria and camps.

"Public Health Propaganda and Education," by S. H. Daukes. *Bull. Hyg.*, 23 Endsleigh Gardens, W. C. 1, London, 1:167–176, Mar., 1926. 1s. 6d. Presents the official status of health education and publicity in Great Britain.

"Public Libraries and Social Hygiene"—*Soc. Hyg.*, Canadian Social Hygiene Council, Toronto, May–June, 1926. Quotes diverse opinions of librarians in reply to an offer of publications. In this connection consult New York State Department of Health regarding coöperation of librarians.

"Publicity Claims 80 Per Cent Cancer Cures from Dr. Koch's Secret Nostrum." *Editor and Publisher*, New York, May 29, 1926. 10 cents. A two-page article in the leading newspaper trade journal.

"The Quack Curse—and Cure," by Henry R. Krasnow. *Ill. Med. Jour.*, Chicago, March, 1926. 50 cents. Based on the *Chicago Tribune's* campaign against the depredations of the charlatans. "The underlying cause of the flourishing of quackery is ignorance, the fundamental remedy must be education."

"Selling Public Health," by Ralph G. Beachley, *A. J. P. H.*, June, 1926. An argument for health department publicity.

"Should There Be a National Safety Museum?" by Louis Resnick. American Museum of Safety, 141 East 29th Street, New York. Free. 7-page mimeographed press release.

"State Program of Sheppard-Towner Unit for Dental Education," by G. H. Mandel. *Jour. Am. Dent. Assn.*, 13:804–809, June, 1926.

EDUCATIONAL MATERIAL

Organizations Publishing Health Posters. American Red Cross, Washington. January, 1926. 8 pages, mimeographed. List of sources.

The Nome Diphtheria Epidemic. John Hancock Mutual Life Insurance Co., Boston. 8-page booklet. Free.

Office Lighting. National Lamp Works, Nela Park, Cleveland. Free. "Very few offices indeed enjoy the advantages of proper artificial lighting." Explains and illustrates what is proper lighting.

Publications Dealing with Medical Subjects of Interest to the Public. American Medical Association, Chicago. Free. Catalogue of educational material.

Workers and Their Teeth Troubles. Union Health Center, 222 Fourth Ave., New York. Free. 30-page illustrated booklet on dental problems of workers and describing dental services offered by the Center.

TIMELY TOPICS

Drinking Water on Auto Trips—*Buffalo Sanitary Bull.*, Department of Health. May 31, 1926.

Our Friend the Ice Man—*Weekly Health Bull.*, Conn. State Dept. Health. July 26, 1926.

Safeguarding the Public Swimming Pools—*Statistical Statement*, Health Dept. District of Columbia. July 3, 1926.

Safe Milk for Camps—*Ill. Health News*, State Dept. Health. July, 1926.

Vacation Hints—*Weekly Health Rev.*, Detroit Dept. Health. July 3, 1926.

Vacationing With Baby—*Ohio Health News*, State Dept. Health. July 1, 1926.

EXHIBITS AND EXPOSITIONS

"The Little House on Wheels," by Mrs. Arthur Withington. *Woman's Press,* New York, March, 1926, 20:196–197. "A model two-room cottage, complete in every detail from window boxes to kitchen sink, mounted on wheels and drawn from neighborhood to neighborhood to demonstrate modern ideas of home making, nutrition and care of children, is the unique vehicle by which the International Institute of the Honolulu Y.W.C.A. is preaching the gospel of better homes in that city."

"Health on Display," by James A. Tobey. *Hygeia,* August, 1926. "A personally conducted tour through the Hall of Health of Mankind" in the Smithsonian Institution, Washington, D. C.

History of an Exhibit of Medical Science, Feb. 16–22, 1926. Public Health Federation, 312 West 9th Street, Cincinnati, O. 10 cents. An 18-page illustrated pamphlet describing the exhibit and program.

A new dental hygiene exhibit, prepared by the Massachusetts Department of Health consists of two factories: the "Well Built Tooth Factory" and the "Poor Food Tooth Factory." These two factories with their little carts of supplies, their attractive or barren yards, different departments, and final shipping of teeth to "Jawville," tell in a vivid and graphic way the story of what is happening in the mouth and jaws of every child from two to six years (according to the kind of diet which the child is getting). Detailed description in *The Commonhealth,* State Department of Health, Boston, April–June, 1926.

"Sending Good Money After Better," by Edwin C. Jones. *Woman's Press,* 600 Lexington Ave., New York. Effectiveness of direct mail appeals for funds—when well done.

The Sesquicentennial exhibit of the Children's Bureau is described in a press release dated July 4, 1926.

TITLES

The Bookkeeping of Human Life—*Statistical Statement,* Health Dept., District of Columbia. July 17, 1926. (Vital Statistics.)

The Conscientious Objector Pays the Price—Radio talk, N. Y. State Dept. Health. July 24, 1926. (Smallpox.)

Fair and Warmer—*Weekly Health Rev.,* Racine Health Department. July 17, 1926. (Perspiration, water drinking, fans, etc.)

The Problem of the "Ex-Baby"—*National Health,* London. July, 1926.

Take Your Common Sense With You On Your Vacation—*Weekly Health Bull.,* Conn. State Dept. Health. July 6, 1926.

The Sunburn Follies—*Popular Health Mag.,* Minneapolis. August, 1926.

Comments are invited on these and other titles quoted in this department.

CONTESTS

The American Eugenics Society offered prizes for the three best sermons on eugenics preached before July 1.

Imperial Baby Week offered a silver challenge shield for the most effective local Baby Week campaign held throughout the Empire exclusive of the British Isles. For particulars see *National Health,* London. June, 1926.

Sentinels of Safety, a bronze trophy, offered by the *Explosives Engineer,* to be awarded for low accident records in mine or quarry, will be presented at the International First Aid Meet, San Francisco, in September. A certificate of honor will be awarded by the Bureau of Mines to every employe of the winning company.

The winning photographs and those receiving honorary mention in the *Hygeia* health photo contest are reproduced in the August, September and October, 1926, issues. "Outdoor exercise, cleanliness (including washing, bathing and tooth hygiene), sunbaths and correct food and eating habits were the chief health items illustrated."

PLAYS

The Cracker Conspiracy—a Fourth of July Fantasy, by Anne Townsend. Advantages of a safe and sane Independence Day dramatically presented. Education Division, National Safety Council, 120 West 42d St., New York. 25 cents.

The Friendly Brushes, by Harriet Wedgwood. American Medical Association, Chicago. 5 cents. A brief for cleanliness.

Health Plays. List of plays published by American Child Health Association, New York. April, 1926. Free.

Humanity Shows the Pictures in Her Art Gallery, by Pauline Eaton Oak. Synopsis in *Red Cross Courier,* Washington. June 15, 1926.

The Trial of Jimmy Germ, by Katherine Howard. *Hygeia,* Chicago. April, 1926.

LISTS

Directory of Newspaper Syndicate Features. *Editor and Publisher,* New York, June 5, 1926. 10 cents. Lists of titles, authors and syndicates.

A Directory of Sanatoria, Hospitals, Day Camps and Preventoria for the Treatment of Tuberculosis in the United States. National Tuberculosis Association, 370 Seventh Ave., New York. 130 pages. Price, $1.00.

Visual Education Directory. National Academy of Visual Instruction, Ogleby Hall, Morgantown, W. Va. 10 cents. Officials in charge of state, city, county and museum visual education services; state associations; institutions which gave courses in visual method.

Who Were Your Health Pioneers?—"Much of the history of every community is left reposing in the heads of elderly folks who would gladly respond to a reporter's intelligent questioning. How did your town arrive at its present status? Who fought for the first street paving? Who put in the first water supply?"

Why not follow this "hunch" from *Editor and Publisher* by digging for the men and women who did the first things for health and sanitation in your community? You may discover some names to honor in a meeting or news story, and may uncover some interesting accounts of the difficulties and methods of the pioneers.

Health Propaganda in Europe—It is known as "health propaganda" in Great Britain and on the Continent. Brief statements on what is being done appear in the *International Health Year-Book* issued by the Health Division of the League of Nations. Publications of the Health Division may be obtained through the World Peace Foundation, 40 Mt. Vernon St., Boston, Mass.

Education in Safety and Accident Prevention—The Second National Conference on Street and Highway Safety, 1926, urged that "Education in safety and accident prevention should be incorporated in the curricula of elementary schools, both public and private, parochial schools, night schools, vocational schools, citizenship schools and schools for non-English speaking adults, and should also be carried on through educational contests, organized playground training, school boy patrols, boy and girl scouts, and junior safety organizations. More advanced training in safety and traffic matters should be developed in secondary schools, normal schools, schools for playground supervisors, engineering schools and universities, including training of traffic engineers. . . . Plans should be developed and put into operation for the education in safety of the general public through newspaper and magazine publicity, including the foreign language press; posters in public places; motion pictures and lantern slides; radio talks; schools for motorists, including both men and women; safe drivers' clubs; safety programs or addresses at meetings of various organizations; churches, mass meetings; plans for reaching parents through school children; special campaigns."

Health Museums in Europe—"The Health Museum directs health propaganda in Esthonia. . . . The Esthonian Medical Association founded the Health Museum as a permanent health exhibition and center for studies. It possesses models, pictures, lantern slides, films, etc., which may be lent out to other institutions. The German Hygiene Museum at Dresden began in 1919 to illustrate the most important branches of hygiene by means of exhibitions which visited nearly every part of Germany."

In Austria "the Health Exhibition, organized by Dr. C. Helly, the Director of the Public Health Office, has given keen support to the work of propaganda against venereal diseases. A special section with many exhibits has been established by the common initiative of the German and Austrian Associations for Combating Venereal Diseases."—*International Health Year-Book*, League of Nations.

SLOGANS

"Add life to your years as well as years to your life." *Chicago's Health*, Chicago Department of Health.

"Breast fed is best fed." An English advertisement.

"Don't swat the mosquito—prevent his breeding." Detroit Department of Health.

ANNUAL REPORTS

The annual statement of the Bureau of Health, Knoxville, is mimeographed, 62 pages, legal size, with blue binder. A good mimeographing job. The absence of both table of contents and index is more noticeable even than in smaller, printed reports.

"Another Chance!" is the cover page title of the 1925 annual report of the House of Another Chance Maternity Home and Hospital, Brighton, Mass. A 2-page case story follows the title page. Statistics, officers, etc., are included.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

With Congress in adjournment, calm and peace prevail in the national capital. Due to the innocuous quietude of our federal lawmaking body, there is no legislation of interest to sanitarians to be reported, nor is there the usual lack of action by Congress on health matters to make sanitarians impatient and irritated. The executive departments continue to function, however, though unexcitedly in the Washington manner, and occasionally there is a court decision of significance.

A National Institute of Health—The bill (S. 4540) introduced by Senator Ransdell to establish a national institute of health deserves more than the passing mention given to it in this department in the last number of the JOURNAL. This measure, in creating a national institute of health, would actually increase many times the scope of the present Hygienic Laboratory, and would authorize the expenditure of $5,000,000 for a building for this purpose, as well as $2,000,000 a year for a 5-year period to construct new and enlarged quarters for the Hygienic Laboratory. Since the sum of $10,000 involved in the Parker bill (H.R. 10125) for the correlation of all federal health activities is said to be contrary to the President's financial policy, this mere matter of $7,000,000 in the Ransdell bill may likewise fail of approval. The Ransdell bill, however, does not increase the rank and status of anybody, nor deal with personnel matters, so that the Bureau of the Budget may have less prejudice against it.

The proposed institute of health would be placed under the jurisdiction of the Surgeon General of the U. S. Public Health Service. Its function would be to study and investigate the cause, prevention, and cure of human diseases. It would be authorized to accept gifts and donations for this purpose, gifts in the amount of $500,000 to bear the name of the donor. The Surgeon General would be permitted to appoint professors, instructors, and experts in the institute, regardless of civil service laws, and to designate fellows to be received at the institution. The facilities of this university or national school of public health, for that is what it would be, would be made available to state, county, and municipal health authorities.

Senator Ransdell in discussing this matter in the Senate during the closing days of the session, made the following significant statement, "National vitality is more important to a country than its commerce, agriculture, industry, finance, foreign affairs, public works, or any other legitimate function of government. It affects the welfare of the nation more than all other problems combined." Would that such sentiments might become contagious, infectious, communicable, and disseminatable in the United States Senate. Then there might be some hope for health legislation. Senator Ransdell's idea will, however, probably be promptly quarantined, vaccinated against, and disinfected.

The Retort Courteous—In the last issue of the JOURNAL there was reported the introduction in the Senate of a resolution (S. Res. 255), apparently sponsored by Arthur MacDonald, for the measurement of members of Congress by anthropological, psycho-physical, and statistical methods. This proposal was also introduced in the House as Resolution 304. In the August 5 issue of the *Boston Medical and Surgical Journal* appears some interesting correspondence between Mr. MacDonald and the editor of that excellent journal. Mr. MacDonald writes to the editor requesting him to make an article out of certain enclosures concerning these resolutions and have it published over Mr. MacDonald's name as author. He says that he is much overloaded and needs this help and would further like 250 reprints to send around. He casually mentions that this will give the magazine a permanent advertisement. The reply of Dr. Walter P. Bowers, the editor, deserves full quotation, as follows:

Your letter of July 16, 1926, has been duly considered. I do not feel that I can write anything which would be acceptable: *First*, because

I am not in sympathy with the action of Congress in making an appropriation for the scientific study of man under the Copeland and Kindred resolutions, and *second*, I decline to write an article to appear over another man's signature.

I am further of the opinion that no competent man could afford to do worth-while work for the sum mentioned and also that Congress had better leave this kind of study to other persons and organizations and devote its resources to matters for which it is more distinctly responsible.

Tennessee Compiles its Health Laws—Under the direction of E. L. Bishop, M.D., Commissioner of Health, the laws pertaining to public health in Tennessee have been compiled by Dr. H. C. Stewart. This valuable compilation includes also the rules and regulations of the department and the opinions of the attorney general regarding public health matters. This collection is not issued in printed form, but has been assembled for the use of the department and for others interested in state health administration. It is the kind of a compilation which every state health commissioner should have at hand for reference. In some states, as in New York and Massachusetts, there are excellent printed editions of the health laws, liberally annotated with court decisions and opinions of the attorney general. These have usually been prepared by the office of the state attorney general, with the coöperation of the department. In some states, however, the laws relating to public health can be found only in the official compiled or general statutes of the state, available only in a few larger libraries. A uniform system of assembling and publishing state health laws would be well worth while.

Health Items from the Federal Executive Departments—The fourth trachoma hospital in this country has recently been established by the U. S. Public Health Service at Richmond, Kentucky. The other three hospitals are located in Arkansas, Missouri, and Tennessee. The Office of Indian Affairs is also conducting special work against trachoma among the Indians and recently announced, through the Department of the Interior, that 136,551 Indians have received physical examinations. Of this number, 27,943 were discovered to have trachoma, and eye operations were performed on 8,457, while about 19,400 others were given treatment.

The General Accounting Office has generously allowed an expenditure requested by the Public Health Service for the purchase of small guns to shoot animals which carry Rocky Mountain spotted fever. The purpose of these missiles is not to attempt eradication of the animals by this means, but to secure specimens for laboratory examinations.

The Children's Bureau has recently issued a statement entitled "What the Children's Bureau is Doing for Mothers and Babies." The bureau has likewise published data showing that the United States, with an infant mortality rate of 71, is behind six other countries in this respect. The countries having more favorable infant death rates are said to be: Norway, Australia, New Zealand, Sweden, Switzerland, and the Netherlands.

The Division of School Hygiene of the Bureau of Education announces that 35 states now have physical education laws, and that 15 of these states have state directors of physical education.

The Bureau of Chemistry has found that the so-called radium waters, having slight radioactive properties, are of little, if any, medicinal value, regardless of extravagant claims made by the vendors of such waters. Those which are misbranded will be dealt with under the Pure Food Law.

The Bureau of Fisheries of the Department of Commerce his issued a bulletin entitled "The Nutritional Value of Fish and Shellfish." It is Bulletin 1000, and is an appendix to the 1925 report of the Commissioner of Fisheries.

The Bureau of Standards is conducting experiments on the radiation from carbon arc lamps with a view to the possible utilization of such light in the treatment of disease.

A sanitary engineer of the Public Health Service is now stationed at Norfolk, Virginia, for the purpose of inspecting the drinking water and culinary water facilities on vessels engaged in interstate traffic. He will later proceed to Charleston and Savannah for the same duties.

Court Decisions—Health laws are not invalid because persons affected by them are given no opportunity to be heard on necessity, according to a Minnesota decision, Draxton vs. Fitch, 207 N. W. 639. It is, of course, a well established rule of law that health officials may act in a summary manner when public necessity requires. Such action must be reasonable and well calculated to promote and preserve the public health and summary action may be taken only in an emergency.

Under Indiana law an order from the State Board of Health forbidding the use of schoolhouses on account of insanitary reasons may be appealed to the courts, State Board of Health vs. Ort, 151 N. E. 31.

Whether the Coca-Cola Company was negligent in allowing contamination of a bottle of their product by a suspender strap was a matter for the jury to determine, as was also the contributory negligence of the party drinking the contents with the suspender strap therein, according to the New Jersey decision of Rudolph vs. Coca-Cola Bottling Co., 132 Atl. 508.

The Florida health officer who was sued for vaccinating children without parental consent informs us that the cases were withdrawn after one of them had been decided in favor of public health by the county court.

A city is not liable for a nuisance created by the maintenance of a municipal tourist camp, according to a Missouri decision, Kennedy vs. City of Nevada, 281 S. W. 56. This result was arrived at because the maintenance of a tourist camp was not considered a legitimate government function of the city. The court said, "The city is liable for creating a nuisance where the authority is exercised in accordance with law, although in an irregular manner. . . ." In this case, however, there was nothing in the corporate powers, as prescribed in the charter, which sanctioned the operation of such a tourist camp.

Miscellaneous Matters—The President has appointed Proctor L. Daugherty as a Commissioner of the District of Columbia to succeed Frederick L. Fenning, who resigned under pressure after impeachment charges. Mr. Fenning was an honorary member of the District of Columbia Medical Society. Mr. Daugherty, who is an engineer and a graduate of the Massachusetts Institute of Technology, where all the students have been given lectures in sanitary science for many years, will undoubtedly be a strong supporter of public health in the nation's capital. It needs support.

The U. S. Department of Agriculture has announced that milk consumption in this country reached its highest point in the nation's history last year. The per capita consumption of milk and cream was estimated at 1.2 pints a day and the quantity consumed as a fluid amounted to 54,326,000,000 pounds. Presumably this also includes milk products, such as condensed milk, and other articles in which milk was used.

CONVENTIONS

September 13–18, American Academy of Ophthalmology and Oto-Laryngology, Colorado Springs, Colo.

September 14–17, New England Water Works Association, Providence, R. I.

September 27–28, American Climatological and Clinical Association, Philadelphia, Pa.

September 27–30, American Occupational Therapy Association, Atlantic City, N. J.

September 27–October 1, American Hospital Association, Atlantic City, N. J.

September 30–October 2, International Union Against Tuberculosis, Washington, D. C.

October 4–7, National Tuberculosis Association, Washington, D. C.

October 4–9, American Library Association, Atlantic City, N. J., and Philadelphia, Pa.

October 11–14, American Public Health Association, Buffalo, N. Y.

October 12, Conference of Health Officers and Public Health Nurses, Buffalo, N. Y.

October 14–16, Association of Military Surgeons of the United States, Philadelphia, Pa.

October 18–22, Playground and Recreation Association of America, Atlantic City, N. J.

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